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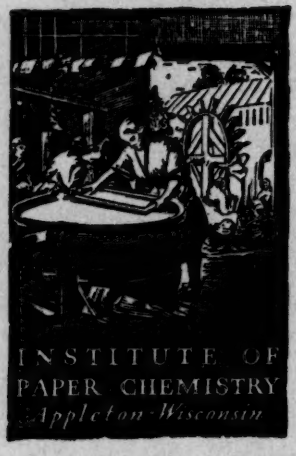
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

FEBRUARY · 1952

Volume 22 Number 6

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Periodicals, Books, and Pamphlets Added to the Library During January

PERIODICALS—BACK VOLUMES

Journal of Biological Chemistry. v. 85-100, 102-4, 121, 1929-34, 1937.

BOOKS AND PAMPHLETS

ADSORPTION

BRUNAUER, STEPHEN. The adsorption of gases and vapors. v. 1. Physical adsorption. Princeton, Princeton University Press, 1945. 511 p.

MANTELL, C. L. Adsorption. 2d ed. New York, McGraw-Hill Book Co., 1951. 634 p.

ALMANACS

The WORLD ALMANAC and book of facts for 1952. Ed. by Harry Hansen. 67th year of publication. New York, New York World-Telegram Corp., c1952. 908 p.

CHARCOAL

NORTHEASTERN WOOD UTILIZATION COUNCIL. Charcoal, production and uses. Bulletin no. 37. New Haven, The Council, 1952. 101 p.

CHEMISTRY, ORGANIC

BEILSTEIN, FRIEDRICH KONRAD. Beilsteins Handbuch der organischen Chemie. 4. Auflage. Zweites Ergänzungswerk, die Literatur von 1920-1929 umfassend, herausgegeben und bearbeitet von Friedrich Richter. Berlin, etc., Springer-Verlag, 1951. 16. Band. 872 p.

CONTAINERS

PRESERVATION, packaging, and packing of military supplies and equipment. Department of the Army technical manual TM 38-230; Department of the Navy NAVEXOS P-938; Department of the Air Force manual AFM 71-1. Washington, U. S. Govt. Print. Off., 1951. 299 p.

DYES AND DYEING

VENKATARAMAN, K. The chemistry of synthetic dyes. New York, Academic Press, 1952. v. 1. 704 p.

FINANCE

STABLER, C. NORMAN. How to read the financial news. New York, Harper & Brothers [c1951] 54 p.

FLUIDIZATION

LEVA, M., WEINTRAUB, M., GRUMMER, M., POLLCHIK, M., and STORCH, H. H. Fluid flow through packed and fluidized systems. U. S. Bureau of Mines bulletin 504. Washington, U. S. Govt. Print. Off., 1951. 149 p.

GASES—ANALYSIS

ALTIERI, V. J. Gas analysis; testing of gaseous materials. New York, American Gas Association [c1945] 567 p.

GLUE

NATIONAL ASSOCIATION OF GLUE MANUFACTURERS. Animal glue in industry. New York, The Association [c1951] 101 p.

HUMIDITY

WEXLER, ARNOLD, and BROMBACHER, W. G. Methods of measuring humidity and testing hygrometers. National Bureau of Standards circular 512. Washington, U. S. Govt. Print. Off., 1951. 18 p.

LESPEDEZA SERICEA

[BAILEY, R. Y.] Sericea in conservation farming. U. S. Dept. of Agriculture. Farmers' bulletin no. 2033. [Washington, U. S. Govt. Print. Off., 1951] 29 p.

LIGNIN

BRAUNS, FRIEDRICH EMIL. The chemistry of lignin. New York, Academic Press, 1952. 808 p.

NEWSPRINT

THE FINNISH PAPER MILLS' ASSOCIATION. Transportation and handling of newsprint. [Helsinki, Frenckellin Kirjapaino Oy, 1949] 179 p. [Text in Finnish and English]

PAPER—ELECTRICAL PROPERTIES

SÈVE, ROBERT. Phénomènes de conductivité électrique dans le papier; phénomènes d'électrisation par frottement. Thèses présentées à la faculté des sciences de l'Université de Grenoble pour obtenir le titre d'ingénieur-docteur. Grenoble, Editions de l'École Française de Papeterie, 1951. 130 p.

PAPER MAKING AND TRADE

NORRIS, F. H. Paper and paper making. London, New York, etc., Oxford University Press, 1952. 353 p.

PELLEGRINI, ANDREA. Cellulosa e carta in Italia. Roma, Ente Nazionale per la Cellulosa e per la Carta, 1951. 180 p.

PAPER MAKING AND TRADE—YEARBOOKS

BARRELL'S Paper annual 1951-1952. Lawrence, Mass., William L. Barrell Co. [1951] v. 10. 96 p. [includes the 1951 revised and enlarged edition of Wheelwright, W. B. Paper trade terms]

PHYSICS

PHYSICAL SOCIETY OF LONDON. Reports on progress in physics. Executive editor, A. C. Stickland. London, The Society, 1950. v. 13 (1950). 424 p.

STATISTICS

U. S. BUREAU OF FOREIGN AND DOMESTIC COMMERCE. *Office of Business Economics.* Business statistics; statistical supplement to the Survey of current business, 1951. Washington, U. S. Govt. Print. Off., 1951. 309 p.

U. S. BUREAU OF THE CENSUS. Statistical abstract of the United States, 1951. 72d ed. Prepared under the direction of Morris B. Ullman. Washington, U. S. Govt. Print. Off., 1951. 1047 p.

SURFACE ACTIVE AGENTS

MOILLIET, J. L., and COLLIE, B. Surface activity; the physical chemistry, technical applications, and chemical constitution of synthetic surface-active agents. New York, Van Nostrand [c1951] 379 p.

WATER—POLLUTION

GREAT BRITAIN. *Department of Scientific and Industrial Research. Water Pollution Research Board.* Report of the Water Pollution Research Board, with the report of the director of Water Pollution Research for the year 1950. London, H. M. Stationery Office, 1951. 44 p.

PROCEEDINGS of the Sixth Industrial Waste Conference, February 21-23, 1951. Sponsors: School of Civil Engineering and Division of Technical Extension, Purdue University; Division of Sanitary Engineering, Indiana State Board of Health. Engineering Extension Department. Extension series no. 76. Lafayette, Ind., Purdue University [1951] 524 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ALCOHOL

ANON. Alcohol for industry. Can. Chem. Processing 35, no. 12: 1004, 1006, 1008, 1010-11 (December, 1951).

The sources and production of alcohol are discussed, including its recovery from spent sulfite liquor, and methods for the preparation of synthetic alcohol are described. 1 illustration. M.W.

ALGINIC ACID

VALLANDIGHAM, V. V., MAGNUSON, A. L., and MILLER, A. How to use algin for surface sizing and surface control. Paper Ind. 33, no. 10: 1176-7 (January, 1952); *cf.* B.I.P.C. 22: 161.

The correct application of algin with either calender-stack water boxes or size presses for controlling the absorptivity of paper or board printing surfaces is discussed. 3 figures and 4 references. E.S.

ALKALINE PROCESSES

SAUNDERS, STEWART. Pre-refining sulphate pulp. Paper Trade J. 134, no. 3: 26 (Jan. 18, 1952); Can. Pulp Paper Ind. 5, no. 2: 8 (February, 1952); *cf.* B.I.P.C. 22: 248-9.

Prerefining pulp has two important advantages: higher yield of board or paper from wood and lower chemical costs in cooking pulp. The disadvantages of prerefining include the purchase, operation, and maintenance of additional equipment, the lower capacity of washing equipment, possible trouble with evaporators in the form of carry-over, and plugging of rotary screens by small fibers. The cooking and prerefining process of the North Carolina Pulp Co. is described briefly. M.W.

ALKALINE PROCESSES—ODOR TROUBLE

WRIGHT, R. H. Odor control in Canada. Pulp & Paper 26, no. 1: 89 (January, 1952); *cf.* B.I.P.C. 22: 314.

This is the same information as presented in the previous references. E.S.

ANTIOXIDANTS

MOORE, R. N., and BICKFORD, W. G. A comparative evaluation of several antioxidants in edible fats. J. Am. Oil Chemists' Soc. 29, no. 1: 1-4 (January, 1952).

α-Conidendrol, β-conidendrol, and norconidendrin were included in a series of compounds which were tested for their antioxidant activity. These compounds proved to be more effective in stabilizing lard than in stabilizing cottonseed oils, and were intermediate in antioxidant activity, with respect to other compounds tested, in cottonseed oil and hydrogenated cottonseed oil. 2 tables, 5 figures, and 10 references. M.W.

ASPHALT

TRAXLER, R. N., and ROMBERG, J. W. Asphalt, a colloidal material. Ind. Eng. Chem. 44, no. 1: 155-8 (January, 1952).

The most outstanding manifestations of the colloidal nature of asphaltic bitumens are considered as evidenced by their solubilities in organic solvents, microscopic examination, rheological characteristics, and the dispersion and flocculation of asphaltenes. Asphalts may be classified generally as gel or sol types, and all degrees of gradation occur between these extremes. 3 tables, 1 figure, and 17 references. M.W.

ASSOCIATIONS

TAYLOR, M. N. Trees for Tomorrow. Tappi 35, no. 1: 109-10A (January, 1952).

The purpose and activities of the organization are discussed. E.S.

BAGASSE

LATHROP, E. C., ARONOVSKY, S. I., and NAFFZIGER, T. R. Increased profits from cane sugar byproducts. Sugar J. 14, no. 1: 10, 12, 14, 25-33 (June, 1951); *cf.* B.I.P.C. 22: 238.

A practical process for separating pith from bagasse fiber and for preparing feed and papermaking fiber is described. The papermaking qualities of fresh or stored bagasse *vs.* fresh or stored pith-free fiber have been determined. It is shown that whole bagasse is suitable for corrugating board manufacture, but that only pith-free fiber is suitable for fine paper manufacture. Freshly separated dried pith-free bagasse fiber is a high-grade papermaking raw material. The probable value of pith as a feed is discussed. Cost estimates indicate that, based on $1.50 per bushel of corn, pith as feed for cattle is worth about $29.00 per ton; dried pith-free baled bagasse fiber would be worth about $13.50 per ton f.o.b. sugar mill. Large-scale pilot-plant studies to separate pith and fiber at a sugar mill are necessary to determine operating costs. In addition, feed and fiber must be prepared for commercial tests. These steps are necessary to commercialize the results of this research carried out at the Northern Regional Research Laboratory. 6 tables, 3 figures, and 11 footnotes. E.S.

BARK

ANDERSON, A. B., and RUNCKEL, WILLIAM J. Utilization of barks in hardboard. Paper Trade J. 34, no. 4: 22, 24, 26, 28, 30 (Jan. 25, 1952).

Investigations by the Oregon Lumber Company have shown that Douglas-fir bark in combination with wood is a suitable raw material for the manufacture of commercially acceptable quality hardboard. The amount of bark present in the composition does not appear to be critical; it may vary from 20 to 45% or more and still yield a standard product. The barkwood hardboard process reduces processing cost because the raw material is cheap and readily available, less power is required for pulping, and it does not require the addition of chemicals such as sizing agents. Preliminary laboratory tests also indicate that western hemlock bark can be used in making acceptable hardboard. 8 tables, 4 illustrations, and 3 references. M.W.

MARTIN, J. S., and BROWN, A. J. Effect of bark on yield and

quality of sulphate pulp from southern pine. Tappi 35, no. 1: 7-10 (January, 1952).

Sulfate pulping tests were made on shortleaf pine chips without bark, on bark alone, and on mixtures of chips and bark containing up to 24% of bark by weight. These tests indicate that considerable percentages of bark can be used in kraft-type pulps but that sulfate pulps made from bark only are unsuitable for use in paper products. In the production of kraft-type, bleaching sulfate, and sulfate semichemical pulps, the presence of bark caused an increase in yield of pulp from a cord of rough pulpwood, an increase in consumption of active chemicals during cooking, and a decrease in brightness of the pulp, or darker-colored pulps. 3 tables, 4 figures, and 1 reference. E.S.

ROBERTS, S. B. Reveals new slants on burning wet salt-laden bark. Power 95, no. 9: 92-5, 212, 214 (September, 1951).

The installations for the satisfactory burning of salt-laden bark from logs floated to the mill of Columbia Cellulose Ltd. at Prince Rupert, B.C. are described. Dripping-wet bark from the hydraulic barker, with sawdust, knots, and woodroom trash is delivered to a hog and then to a three-roll Squiers sugar-cane mill which shreds and dewaters the product to less than 50% moisture; from the cane mill it passes to a hopper over a star-type rotary feeder which discharges into a low-pressure pneumatic conveyor which, in turn, sends the waste fuel to a cyclone in the boiler house, and from here it is fed to the chutes to the furnaces. The waste wood is fired in suspension over a coal-burning spreader stoker with traveling grate. The operation to date indicates good performance when the two fuels are burned together. 1 table and 8 figures. E.S.

BARKERS AND BARKING

CANADA. DEPARTMENT OF RESOURCES AND DEVELOPMENT. *Forestry Branch. Forest Products Laboratories.* Bark removal methods and machines. Pulp Paper Mag. Can. 52, no. 13: 96-100 (December, 1951).

Information on the various types of barkers is presented in tabular form, classified into four groups: cutting knives, rubbing friction, hydraulic erosion, and thermo pressure. The fourth method is still in the development stage. 4 tables. E.S.

KLEM, GUSTAV G. A study on the floating and sawing of barked and unbarked logs. Norsk Skogind. 5, no. 11: 356-9 (November, 1951). [In Norwegian; English summary]

The barking of logs in the forests represents about 50% of the felling time. If the barking could be carried out at the mills, considerable advantage would be realized. The Norwegian Forestry and Forest Industries Research Organization has made the necessary appropriations for a study of the buoyancy of unbarked logs; an investigation was also made of the quality of sawn goods made from logs floated in unbarked condition. A survey of the preliminary results indicates that, after floating a distance of 330 km., the buoyancy of unbarked spruce seems to be higher than that of logs which were either fully barked or barked in patches. No important difference was found in the case of pine. The investigation seems also to indicate that the average quality of sawn goods from logs floated with the bark is higher than from logs barked in the forests. 3 figures. E.S.

BLEACHING

KRAFT, FERDINAND. Pulp bleaching in America. Das Papier 5, no. 23/24: 478-89 (December, 1951). [In German] *cf.* B.I.P.C. 9: 139.

This is an extensive review of developments since approximately 1940 and of the present status of pulp bleaching in the United States and Canada, covering some statistical data on consumption and production, chemical reactions involved in bleaching, equipment and its operation, a description of a few typical bleach plants, and the application of new bleaching agents, including sodium chlorite, chlorine dioxide, and the peroxides. 2 tables, 9 figures, and 23 references. E.S.

BOARD—CONVERSION

BOXBOARD CONTAINERS. Carton waxing. Article 2—Techniques of carton waxing. Boxboard Containers 70, no. 709: 17-18, 20 (January, 1952).

The methods of wax application include the hot-wax method, the cold-water process, and the impregnation of cartons. The techniques used with each method are described; special emphasis is placed on the control of wax temperature. 2 illustrations. M.W.

BOXBOARD CONTAINERS. Folding paper box finishing operations. Article 1—Carton window application. Boxboard Containers 69, no. 708: 12, 14, 16 (December, 1951).

The methods of co-ordination of feeding, adhesive positioning, and registering of cartons which are employed for the application of windows are described. The proper handling of film and the importance of humidity control systems are also mentioned. 3 illustrations. M.W.

INTERNATIONAL PAPER COMPANY. *Single Service Division.* New milk bottle plant. Paper Trade J. 134, no. 2: 11-12 (Jan. 11, 1952); Southern Pulp Paper Manuf. 15, no. 2: 84, 86 (February, 1952).

A plant for the production of Pure-Pak milk containers has recently been completed at Atlanta, Ga. A production of 30 million containers a month of all sizes will help to meet the increasing demand for paper milk containers which in 1945 represented 10.7% of all containers used and in 1950 had risen to 31.2%. The Ex-Cell-O process for making the containers and the equipment are described briefly. 5 illustrations. M.W.

BOARD—SHEET FORMATION

MEAGHER, CHARLES F. Operation of suction drum press on a cylinder board machine. Pulp & Paper 26, no. 1: 58 (January, 1952).

The revamping and speeding up of a cylinder board machine from 65 to 75 tons per day of various combination boxboards caused troubles in sheet formation; the most serious problem in connection with the installation of a new suction drum press was ply separation, predominantly in the middle of the sheet between webs of identical stocks. By controlling the setting of the box, the vacuum and nip pressure by a vacuum breaker, and the freeness of the stock, improvements have been obtained, but the problem has not yet been entirely solved. E.S.

BOARD MILLS

ANON. Pictures from Alstermo Bruk. Svensk Papperstidn. 54, no. 24: 847-53 (Dec. 31, 1951). [In Swedish]

A history of the Swedish board mill is presented in 45 illustrations depicting the different activities. The mill makes hardboard, matrix board, and artificial leather; a certain amount of the last-named is converted to luggage in a special department. E.S.

PULP & PAPER. Tennessee Paper Mills has doubled boxboard output since 1945. Pulp & Paper 26, no. 1: 85 (January, 1952).

A brief reference is made to the equipment and modernization program of the two cylinder-board machine mill on the Tennessee River, whose output of folding and setup grades of boxboard and specialties ranges from 250 to 260 tons daily. The mill uses principally waste paper and some virgin pulp in the higher grades. In 1946 it was licensed to use the Champion machine-coating process. 3 illustrations. E.S.

BOARD MILLS—WASTE LIQUOR

AMBERG, H. R. Factors affecting the lagooning of white water. Proc. 6th Ind. Waste Conf.; Purdue Univ., Eng. Bull., Extension Ser. no. 76: 148-57 (November, 1951).

Studies were made on the lagooning of boardmill waste to determine the feasibility of this process and to study the factors which affect lagooning. The major factor which influences the efficiency of lagoons was found to be the surface-to-depth ratio; the major portion of stabilization takes place in the upper eight inches. The optimum temperature appears to be between 30 and 40°C. Seed ratios in excess of 0.67 did not show sufficient improvement in efficiency to warrant their use. A B.O.D. reduction of 80% can be effected in a 2-ft. lagoon at 30° with a B.O.D. loading of 70 lb./acre-ft./day, and the same efficiency can be accomplished in a 4-ft. lagoon with a B.O.D. load of 35 lb./acre-ft./day. By intermittent aeration the efficiency can be increased considerably. 1 table, 9 figures, and 4 references. M.W.

KRANCHER, CARL G. Strawboard lagoon operation at Noblesville, Indiana. Proc. 6th Ind. Waste Conf.; Purdue Univ., Eng. Bull., Extension Ser. no. 76: 464-78 (November, 1951).

A description is presented of the lagooning system of the Ball Brothers Company, Noblesville, Ind., for the clarification and purification of strawboard mill wastes. The data which have been obtained from this operation show that lagooning gives a reasonably efficient means of reducing pollution from this source. Substantial reductions in B.O.D. and suspended solids can be made with lagoons of ample capacity; they offer valuable storage capacity for waste, so that the effluent can be properly controlled to cause a minimum disturbance in the receiving stream. 2 tables and 10 figures. M.W.

BOARD SPECIALTIES

MALCOLMSON, J. D. Uses for Gair pallets. Fibre Containers 37, no. 1: 28, 30 (January, 1952).

The construction and advantages of corrugated pallets and power packages (an expendable pallet with a corrugated superstructure which usually looks like a four-foot cubical box) made by Robert Gair Co. are described; examples of their applications to spooled wire, printed cigarette folder-carton blanks, and roller bearings are given. 4 illustrations. E.S.

BOARD TESTING—PHYSICAL

MACKNEY, A. W. Physical tests of structural type boards. Tappi 35, no. 1: 102A (January, 1952); *cf.* B.I.P.C. 21: 766.

With reference to TAPPI Suggested Method T 1001 sm-51, minor modifications of the standard board machine are recommended. E.S.

CARBON

ANON. Manufactured carbon and its application in the paper industry. World's Paper Trade Rev. 135, no. 24: 1749-50, 1755-6 (June 14, 1951).

"Morganite" carbon, the product of the breakdown of carbon compounds, has found many varied applications in the paper industry. Because no lubrication is required for parts made of this carbon, it is especially applicable in steam joints for paper driers, bearings, shaft seals, and piston rings for compressors. Its nonhygroscopicity, chemical inertness, resistance to thermal shock, and long life make it suitable also for use in carbon sealing strips for suction boxes, linings for pulp digesters, and current collection units for electric cranes. 1 table and 4 figures. M.W.

CELLULOSE—DEGRADATION

ROSEVEARE, W. E. Characterization of celluloses by hydrolysis. Ind. Eng. Chem. 44, no. 1: 168-72 (January, 1952).

Information on the behavior of a variety of celluloses during hydrolysis is presented. The specific reaction rates for the solution of the reactive fraction on hydrolysis were found to be practically the same for several native and regenerated celluloses. Aqueous alkali treatments of native and regenerated cellulose bring their hydrolytic accessibilities very much closer together with 9 to 12% sodium hydroxide than at neighboring concentrations. A mild hydrolysis of three rayons in 5 *N* hydrochloric acid at 18°C. did not stabilize them with respect to loss in weight on subsequent severe hydrolysis at high temperatures. Rayon-grade cotton linters and sulfate wood pulps, as well as rayons, show more of a leveling off of D.P. on hydrolysis than do several rayon-grade sulfite pulps. The D.P. after hydrolysis is used to characterize the changes produced in cotton linters and a wood pulp by treatment with various concentrations of caustic. Crystallization of amorphous material on hydrolysis is inhibited by its preoxidation, so that all of it may be removed on subsequent hydrolysis. 5 tables, 5 figures, and 28 references. M.W.

CELLULOSE—HEAT OF WETTING

ASHPOLE, D. K. Correlation between initial Young's modulus and differential heat of sorption at zero regain for cellulosic fibres. Nature 169, no. 4288: 37-8 (Jan. 5, 1952); *cf.* B.I.P.C. 19: 384-5; 20: 237.

A statistical analysis has been carried out with the use of an empirical relationship of linearity between the logarithm of heat of wetting and the moisture regain of various cellulosic fibers. If these recalculated heats of sorption at zero regain are compared with the initial Young's modulus of the fibers, a close correspondence is found. An explanation for this is found in the nature of the structure of cellulose fibers. The free hydrogen bonds associated with the hydroxyl groups are largely situated in the amorphous regions. The differential heat of sorption at zero regain is a measure of the freedom of the hydrogen bonds in the amorphous region. The amorphous

region is also responsible for the strength of a fiber, and moist fibers are weakened because the hydrogen bonds are being satisfied by water rather than by exerting a mutual bond to hold the amorphous region together. If the total heat of wetting of the fibers is plotted against the work of rupture, some correspondence is found which indicates that, for the initial strains of all cellulose fibers, it is the hydrogen bonds which give, and these bonds are also largely responsible for the strength of the fiber up to the breaking point, except in cases where other types of bonding (e.g., acetyl) predominate. 1 table, 1 figure, and 5 references. M.W.

CELLULOSE—HOLOCELLULOSE

TIMELL, T. E., and JAHN, E. C. A study of the isolation and polymolecularity of paper birch holocellulose. Svensk Papperstidn. 54, no. 24: 831-46 (Dec. 31, 1951). [In English; German and Swedish summaries]

A study was made of the effect of various delignifying agents on the lignin content, pentosan content, and D.P. of the cellulose component of paper birch (*Betula papyrifera* Marsh). Several series of holocellulose were prepared by three methods: the Van Beckum-Ritter procedure (TAPPI T 9 m-45) (I), a modification of (I) involving the direct introduction of chlorine into an aqueous suspension of the wood meal (II), and the chlorite procedure as outlined by Wise (III). The D.P.'s were determined from viscometric measurements on the corresponding nitrates and, in addition to paper birch, some experiments were carried out on two samples of acetate-grade cotton linters. The authors found that (II) gave the most complete lignin removal without losses of pentosans and with the least amount of depolymerization of the cellulose; (I) was comparable with (II), and (III) resulted in pentosan losses and greater degradation of the cellulose. The application of the three procedures to cotton linters showed that in this case (III) brought about the least depolymerization. In the discussion of the experiments the authors make the assumption that the intrinsic viscosities found in cupriethylenediamine (CED) are the same as those found with cuprammonium. All D.P.'s were calculated from CED viscosities, using Staudinger's constant for cuprammonium viscosities. [The work of Conrad, Tripp, and Mares, *cf.* B.I.P.C. 22: 324, in which the two intrinsic viscosities are found to be different, may invalidate the D.P.'s listed.] The procedures are described in considerable detail. 19 tables, 4 figures, and 51 references. R.C.R.

CELLULOSE, BACTERIAL

KAUSHAL, R., WALKER, T. K., and DRUMMOND, D. G. Observations on the formation and structure of bacterial cellulose. Biochem. J. 50, no. 1: 128-32 + 3 plates (November, 1951); *cf.* B.I.P.C. 21: 688.

The authors found that cellulose membranes produced by *Acetobacter acetigenum* yield an x-ray pattern similar to that revealed by x-ray examination of cotton cellulose. Membranes from very young cultures on media containing glucose, glycerol, and ethylene glycol, respectively, as sources of carbon have been examined in the electron microscope. The preparations from the glucose media show cellulose films in which threads are present usually of a width either a little less than 250 or approximately 500 A.; the latter are in the majority. The preparation from a glycerol medium shows mainly amorphous material with very few threads or bands of cellulose, of a width of approximately 500 A. The preparation from the ethylene glycol medium also shows amorphous material with not many fibrils. It is sug-

gested that the amorphous material consists of a carbohydrate at a stage of polymerization lower than cellulose. 2 tables, 11 figures, and 15 references.
E.S.

CHEMICAL TESTING—CARBOHYDRATES

LOEWUS, FRANK A. Improvement in anthrone method for determination of carbohydrates. Anal. Chem. 24, no. 1: 219 (January, 1952); *cf.* B.I.P.C. 20: 9.

A modification of the anthrone method of carbohydrate determination employs ethyl acetate as the anthrone solvent. Sulfuric acid is added to the reagent just prior to the determination; in this way color variations from this source are eliminated, and only one standardization curve is necessary. The acetic acid and ethanol produced by the hydrolysis of ethyl acetate do not interfere with the reaction in any way. 5 references. M.W.

CHEMICAL TESTING—CELLULOSE—ACCESSIBILITY

BROUGHTON, GEOFFREY, and NA, C. S. A new technique for determining accessibility in paper pulp. Paper Trade J. 134, no. 1: 22-3 (Jan. 4, 1952).

The method employed by Nickerson (*cf.* B.I.P.C. 21: 617) for determining the accessibility of cellulose by means of formic acid esterification has been used to study any changes in the amorphous-crystalline ratio of pulp which might be produced by beating. The results on hand sheets formed from bleached sulfite and bleached kraft pulps after various beating times show a slight increase in accessibility with beating. To determine the effect of air drying, a sample of bleached sulfite was dried by successive washings in acetone and benzene and then formylated. Contrary to what was expected, an air-dried sample showed a greater increase in accessible cellulose fraction than the solvent-dried sample. Oxidation rates were determined for two samples by the chromic acid method (*cf.* B.I.P.C. 21: 541), and these also showed a small increase of accessibility with beating. 2 tables, 1 figure, and 6 references. M.W.

CHEMICAL TESTING—PULP—CUPRAMMONIUM VISCOSITY

DOERING, HELMUT. A rapid method for the determination of the degree of polymerization of cellulose according to Staudinger. Das Papier 5, no. 23/24: 507-10 (Dec. 31, 1951). [In German]

The cellulose is dissolved in cuprammonium to which metallic copper is added. The copper in contact with ammonia readily absorbs oxygen and thus prevents the decomposition of the cellulose by the oxygen of the air. The solution is siphoned to a viscometer and allowed to drop through a capillary into a measuring flask. The time required for filling the flask is determined; the measurements are carried out at room temperature. This procedure is performed with the cellulose-cuprammonium solution and with the cuprammonium alone. The D.P. is calculated according to the Staudinger equation or according to the formula of Schulz. 1 table, 2 figures, and 6 references.
M.W.

VALTASAARI, LEA. The viscometric determination of the molecular weight of cellulose and some theories and methods of calculation in connection with it. Paper and Timber (Finland) 33, no. 12: 391-9 (December, 1951). [In Finnish; English summary]

The author reviews the recent literature on the theory and practical applications of the D.P. value of cellulose. The principal methods for the determination of the D.P. are compared, and the nature and mutual reproducibility of the results are discussed. Detailed consideration is given to the cuprammonium viscosity method, which is still the most popular procedure, particularly for routine testing. Values published for the Staudinger proportionality constant are given, and the experimental determination of the intrinsic viscosity by extrapolation and by calculation based on a single measurement is described and illustrated. 7 tables, 6 diagrams, and 21 references. E.S.

CHEMICAL TESTING—PULP—TUNGSTEN

GRAN, GUNNAR. Determination of tungsten in wood and wood pulp. Svensk Papperstidn. 54, no. 22: 764-8 (Nov. 30, 1951). [In English; Swedish and German summaries]

The method involves two steps: the decomposition of the sample to obtain a solution which contains the tungsten (I), and the colorimetric determination of (I) in this solution. The first step consists of wet ashing the sample with perchloric and nitric acid, evaporation to dryness, and dissolution of the resulting tungsten trioxide in sodium hydroxide. The colorimetric determination is carried out according to a modified procedure by Feigl and Krumholz (*cf.* Angew. Chem. 45: 674-5 [1932]). Potassium thiocyanate and stannous chloride in concentrated hydrochloric acid are added and, after standing for exactly 60 minutes, the solution is diluted with distilled water and the extinction measured at 400 mμ. A reagent blank and two or more standards are run at the same time; a graph is constructed from the extinction values found for the standards, and the amount of (I) in the samples is read from this graph. The effect of the following factors upon the extinction was investigated: amount of (I), stannous chloride, and potassium thiocyanate; volume of solution; and time. An accurate analysis is described in detail. 1 table, 7 figures, and 9 references. E.S.

CHEMICALS

WILLIAMS, A. E. Iodides in paper technology. World's Paper Trade Rev. 135, no. 24: 1720, 1722 (June 14, 1951).

The use of iodides in paper technology for the production of telegraphic receiving papers, parchment, and similar papers, and in the identification of fibers is discussed. The iodometric analysis of cooking liquors is also described. M.W.

CHROMATOGRAPHY

STRAIN, HAROLD H., and MURPHY, GEORGE W. Chromatography. Anal. Chem. 24, no. 1: 50-60 (January, 1952); *cf.* B.I.P.C. 21: 390.

A review of the literature of 1951 on chromatography is presented; a number of analogous analytical methods that depend on the differential migration of components of mixtures are compared. 2 tables and 385 references. M.W.

COLOR

WHITMAYER, L. E. Color engineering: paint for safety and efficiency of paper production. Tappi 35, no. 1: 123-5A; discussion: 125A (January, 1952).

The author deals with color from the psychological standpoint and gives examples of the effects of correct "color conditioning." 1 table. E.S.

COLORIMETRY

DAVIDSON, H. R. A simple solution to the "artificial light" problem. Am. Dyestuff Reptr. 41, no. 1: 1-10 (Jan. 7, 1952).

An alternate title for this article could be "Instrumental color matching." It is a relatively simple matter to make a dyeing which will match a given sample in daylight alone or in tungsten light alone; it is a much more difficult matter to make a dyeing which will match a sample in both. This is due to the eye's inability to analyze a color or break it down into components; hence, it becomes necessary to resort to instrumental methods. In principle, the solution of the problem of making a match for all conditions of illumination is very simple. If the spectrophotometric curves of two colors are identical, the colors will match under all types of illumination. The author outlines a method of calculating the dyebath formula which will yield a match under all types of illumination. The choice of component dyes is based solely on the file of spectrophotometric curves of dyeings with standard dyestuffs. A method of calculating the concentrations of each component is presented, as well as a sample calculation. This is based on a formula relating the (k/s) value of the sample to be matched with the (k/s) values of the component dyes and undyed base stock; k and s are the absorption and scattering coefficients, respectively, and the ratio (k/s) is related to reflectance by the Kubelka-Munk theory. A complete table of (k/s) for 0.1% reflectance steps is included (*cf.* also Nolan, B.I.P.C. 8: 107). 8 tables, 13 figures, and 1 reference. O.H.O.

CONVERSION FACTORS

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Engineering Data Sheet Committee.* Pulp and water conversion factors. Pulp Paper Mag. Can. 52, no. 13: 113 (December, 1951).

The text of Data sheet Z-2 (issued November, 1951) is reproduced; it deals with airdry-ovendry conversion factors, pulp production-flow conversion factors, and water weight and volume equivalents. 2 tables. E.S.

CORROSION

DAY, CLYDE W. Corrosion and its control in a chemical plant. Chem. Eng. 59, no. 1: 154-7 (January, 1952).

The corrosion control program of the Celanese Corp. of America plant at Bishop, Tex., is outlined. The importance of flexibility in such a program is stressed. Reports of inspection are suggested as a good source of information, and photography has been found to be an effective means of presenting it. 9 illustrations. M.W.

STOCKMAN, LENNART. Kraft digester corrosion. Tappi 35, no. 1: 102-3A (January, 1952).

Reference is made to Swedish research on this problem and the appointment of a special sulfate corrosion committee at the beginning of 1951, the members of which are listed; closer co-operation with the Canadian and U.S. committees is desired. Thus far the influence of the various components of the white liquor on the rate of corrosion has received attention, and experiments on steels with various percentages of silicon, carbon, and magnesium are in progress. The results obtained to date make it probable that the

thiosulfate and sulfur (and possibly other constituents) in the white liquor have a pronounced influence on corrosion rate. 2 tables. E.S.

TEEPLE, H. O. Digester Corrosion Subcommittee. Tappi 35, no. 1: 96-7A (January, 1952); *cf.* B.I.P.C. 22: 326.

This is the second report of the activities of the TAPPI Digester Corrosion Subcommittee which was presented at the meeting in Savannah, Ga. on Oct. 15, 1951. 1 table. E.S.

COST—ACCOUNTING

SØMME, KNUD. Principles of industrial cost accounting. Norsk Skogind. 5, no. 11: 343-55 (November, 1951). [In Norwegian; English summary] *cf.* B.I.P.C. 22: 12-13.

The author discusses the use of different principles of industrial costing methods, including the principles of proportionality and cause in connection with the allocation of indirect costs in product calculations. In addition, the principles of alternatives by fixation of internal accounting prices between different production departments are discussed. Finally, the principles for the calculation of the profit per unit of the minimum factor are treated in connection with the selection of the most favorable production schedule. The traditional calculation of cost to the manufacturer is examined and criticized. Suggestions for improvements are given and supplemented by examples. 1 table, 5 figures, and 14 references. E.S.

DE-INKING

MORRISON, H. A. How vacuum washers improve efficiency of deinking and bleaching operations. Paper Ind. 33, no. 10: 1180-1 (January, 1952).

The advantages of vacuum washers in modern deinking installations combined with single or multistage bleaching are discussed. Vacuum washers retain most of the fiber and reject the carbon, off-color fillers, and dissolved impurities. 2 flow diagrams. E.S.

PALLADINO, A. J., and BAIGAS, J. F., Jr. Deinking waste treatment plants at Plainwell, Michigan, and Fitchburg, Massachusetts. Proc. 6th Ind. Waste Conf.; Purdue Univ., Eng. Bull., Extension Ser. no. 76: 434-40 (November, 1951); *cf.* B.I.P.C. 21: 314.

The primary treatment plant of the Falulah Paper Co., Fitchburg, Mass., and the demonstration plant for the biological aeration process at Plainwell, Mich., are described. Although the plants have been in operation for only a short time, some insight into the engineering aspects of deinking has been obtained. It has been found that ordinary circular tanks with peripheral overflow weirs and submerged inlets result in solids removal very close to those obtained by quiescent settling in the laboratory. Steel tanks can be used without danger of corrosion. Much higher sludge consistencies have been obtained than were previously indicated. The possibility of obtaining sludge of nearly 15% solids concentration directly from the clarifier makes the use of sludge-drying beds attractive in cases where extensive drying areas are available. Vacuum filtration and hauling of sludge is the alternative where land area is limited. 3 tables and 1 figure. M.W.

ENZYMES

RAY, D. L., and JULIAN, JEAN R. Occurrence of cellulase in *Limnoria*. Nature 169, no. 4288: 32-3 (Jan. 5, 1952).

Contrary to earlier findings on the absence of cellulase in the marine wood-boring isopod, *Limnoria*, an investigation is reported which indicates that an enzyme capable of catalyzing the hydrolysis of cellulose is present in the enteric diverticula of *Limnoria*. 1 table and 3 references. M.W.

WHITAKER, D. R. Purification of the cellulase of *Myrothecium verrucaria*. Nature 168, no. 4286: 1070-1 (Dec. 22, 1951).

Procedures for the concentration and purification of the cellulase in culture filtrates of *Myrothecium verrucaria* are described. Chromatographic separation on calcium phosphate gel columns and ammonium sulfate precipitation were employed. 3 figures and 8 references. M.W.

EVAPORATION AND EVAPORATORS

BADGER, W. L., and LINDSAY, R. A. Evaporation. Ind. Eng. Chem. 44, no. 1: 50-3 (January, 1952); *cf.* B.I.P.C. 21: 393.

The literature of the past year on the theory and practice of evaporation is reviewed. It concerns, for the most part, the problems involved in the evaporation of spent sulfite liquor. 58 references. M.W.

FEED WATER

POCOCK, B. Boiler feed water treatment. Paper-Maker (London) 122, Annual no.: 12-16, 58, 60-1 (1951).

The author discusses feed-water treatment for low- and medium-pressure boilers, including the different internal and external methods of treatment, the selection of treatment, feed-water conditioning, scale formation, carry-over, caustic embrittlement, and the need for regular testing to observe and control the treatment at all stages. E.S.

FIBER—DIMENSIONS

BISSET, I. J. W., DADSWELL, H. E., and WARDROP, A. B. Factors influencing tracheid length in conifer stems. Australian Forestry 15, no. 1: 17-30 + 2 plates (1951); *cf.* B.I.P.C. 22: 329.

Because of the practical significance of tracheid length in the pulp and paper industry and of its correlation with properties, the variation of this feature within and between stems of certain species of *Pinus* has been investigated. The tracheid length has been related to the rate of radial growth of the stem and, in general within any one stem, it has been found that a wider growth ring has a low average tracheid length and a narrow growth ring, a high average tracheid length. Some evidence was obtained of a similar correlation between stems. Trees with an initial high tracheid length maintained this characteristic through growth rings subsequently formed. The reasons for the variation in initial tracheid length are unknown, but in *Pinus pinaster* Sol. it appeared to have some relation to the "strain" of the species. Possible means by which stems of high initial tracheid length may be obtained are discussed. 6 tables, 6 figures, and 21 references. E.S.

FIBER—STRUCTURE

FREY-WYSSLING, A., and MÜHLETHALER, K. The fine structure of cellulose. Fortschritte der Chemie organischer Naturstoffe 8: 1-27 (1951).

The knowledge of the fine structure of cellulose which has been gained through studies of the plant cell walls and microfibrils is reviewed. From

investigations of chemical reactions, electron-microscope data, and x-ray analyses, it has been determined that the microfibrils which comprise the fine structure of cellulose are individualized and have a uniform diameter of 200-300 A. These crystalline strands are linked together by paracrystalline strands to form a coherent structure which may be separated into individual fibrils by hydrolysis. The orientation of the microfibrils in cell walls is responsible for their physical properties. The microfibrils are dispersed and interwoven in primary cell walls, and parallel in secondary walls. Therefore two types of spaces are available for incrusting substances or topochemical reactions: (1) interfibrillar capillaries which are accessible to colloidal particles (e.g., direct dyes), and incrusting substances (e.g., lignin), and (2) intermicellar spaces formed by paracrystalline cellulose which are accessible only to small molecules which show a specific affinity for cellulose (e.g., water, alkali, and iodine). 3 tables, 10 figures, and 61 references. M.W.

RIBI, EDGAR. Submicroscopic structure of fibres and their formation. Nature 168, no. 4286: 1082-3 (Dec. 22, 1951).

The diameter of the submicroscopic fibrils of cellulose has been reported by some investigators to be about 100 A., and viscose rayon has been shown to be built up from fibrils which are about 100 A. wide. Studies on the structure and morphology of chitin, synthetic polyamide fibers, and polyethylene plastics show that the submicroscopic fibril is not specific for cellulose but rather a quite general morphological element which may be formed when linear macromolecules order themselves in a lattice. It is stressed here that the dimensions of the crystallized areas perpendicular to the main valence chains correspond quite generally to the thickness of the submicroscopic fibrils (of the order of magnitude of 100 A.), which has been suggested for cellulose and confirmed by investigations on chitin. This report indicates that the observed structure of viscose rayon is not necessarily the result of crystalline residues from the native cellulose. 13 references.
M.W.

RITTER, GEO. J., and MITCHELL, R. L. Fiber studies contributing to the differential shrinkage of cellulose. Paper Ind. 33, no. 10: 1189-93 (January, 1952); *cf.* B.I.P.C. 22: 250.

Data have been presented to show that isolated ray cells shrink and swell in their longitudinal direction, which is the radial direction of wood, to the same extent as the wood from which they were isolated. Data are also included which show that the chemical removal of ray cells from woods does not modify the shrinking and swelling of the wood. These findings are in agreement with previously reported microscopical and x-ray data, but they are at variance with the earlier belief that ray cells restrain radial shrinking and swelling. The greater shrinking and swelling of the dense summerwood as compared with that of the springwood in the tangential direction was shown to account for only a small part of the greater tangential than radial shrinking and swelling. It was shown that the difference between radial and tangential shrinking and swelling can be accounted for on the basis of the crystallite structure which is bent around the pits predominantly present in the radial wall. This structure introduces a longitudinal component into the dimensional changes of the radial wall and thereby lessens radial shrinking and swelling. The primary-layer cellulose crystallites, which are arranged parallel to the transverse perimeter of the fibers, restrain external shrinkage of the fibers. This restraining effect increases with increasing size of the fiber lumen; accordingly, the external shrinkage of the wood decreases, in general, with decreasing specific gravity of the wood. 2 tables, 5 figures, and 12 references. E.S.

FLUID DYNAMICS

LEVA, MAX, and WEINTRAUB, MURRAY. Fluid dynamics. Ind. Eng. Chem. 44, no. 1: 68-75 (January, 1952).

The literature of 1951 on fluid dynamics is reviewed in the following sections: flow through apparatus, fluidization, viscosity, instrumentation and measurement, and mathematical and theoretical aspects. 259 references. M.W.

FORESTS AND FORESTRY

ANON. Wisconsin's forest inventory. Paper Ind. 33, no. 10: 1185-6 (January, 1952).

Reference is made to a survey under way in 32 of Wisconsin's northern counties, consisting of aerial photography, sampling surveys, and intensive surveys. The purpose of the inventory is to determine species and forest types of timber, volume, rate of growth, and location. The project is a joint undertaking of private industry (including the paper mills), counties, and the U. S. Forest Service. 5 illustrations. E.S.

FURFURAL

ANON. Why the furfural freshet? Chem. Eng. 59, no. 1: 217-18 (January, 1952).

The completion of the new plant of Quaker Oats Co. at Omaha, Neb. brings the nation's total production capacity of furfural to approximately 100 million pounds per year. Corn cobs are the leading raw material, although cottonseed, rice, and oat hulls are also used. The production process consists basically of digestion of the raw material with dilute sulfuric acid which hydrolyzes the pentosans in the material to pentoses and these, in turn, split off water to form furfural. The current principal end uses for furfural, in order of decreasing tonnage, are: chemical intermediates, lube-oil upgrading, synthetic resins, furfuryl alcohol, synthetic resins, and resin-bonded grinding wheels. As a chemical intermediate it is used in the production of nylon, plastics, and pharmaceuticals. New uses for furfural include its application in the refining of gas oils and removal of catalyst-poisoning sulfur compounds from cat-cracker stock, for recovery of aromatics, and for decolorizing wood rosin. 1 illustration and 1 flowsheet. M.W.

QUAKER OATS COMPANY. Through furfural corncobs work for everybody. Chemurgic Digest 11, no. 1: 6-7 (January, 1952).

Reference is made to the recent opening of a new plant at Omaha, Neb. for the conversion of corncobs into furfural, and several uses for furfural in various industries and agriculture are mentioned. 3 illustrations. M.W.

HARD WOODS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Lake States Section.* Hardwood utilization. Tappi 35, no. 1: 107-9A (January, 1952).

In a panel discussion, the following papers were presented: West, Paul. Pulping of hardwoods by modified soda process, p. 107-8A; Grabowski, Henry. Hardwood sulphite pulping, p. 108A; and Brabender, George J. Cooking and bleaching of hardwood kraft, p. 108-9A. Two other papers by

Hugh Miller on Semichemical pulping of hardwood and by C. K. Textor on Development in the refining of hardwoods will be published later. 2 tables. E.S.

HEAT

SKAPERDAS, GEORGE T. Heat transfer. Ind. Eng. Chem. 44, no. 1: 75-8 (January, 1952); *cf.* B.I.P.C. 21: 399.

The 1951 literature on convection, gas-solid systems, heat transfer with change of state, conduction, temperature measurement, and heat-transfer applications is reviewed. 89 references. M.W.

HISTORY

ANON. The Fourdrinier saga. Bowater Papers no. 2: 36-41 (1951).

Some of the personalities and incidents involved in the development and manufacture of the Fourdrinier machine are described. 4 illustrations. M.W.

INSECTS AND VERMIN

VAN HORN, WILLIS M. Testing insect resistance. Fibre Containers 37, no. 1: 60, 62 (January, 1952).

Following a brief discussion of the kinds of insects causing packaging troubles (particularly the cadelle) and their characteristics, the procedures "A" and "B" of the TAPPI Suggested Method T 473 "Insect resistance of packages, paper, and paperboard" are outlined; several modifications are recommended. 4 references. E.S.

INVENTORIES

ANON. Value of inventory. Paper & Twine J. 25, no. 11: 13, 28-30 (January, 1952).

A series of ten important points to consider in connection with inventory valuation are listed and discussed, and the cost or market type of inventory is explained. A number of factors are involved in keeping an inventory, but the simplest method suitable to a business is usually the most satisfactory. M.W.

IONS

KUNIN, ROBERT. Ion exchange. Anal. Chem. 24, no. 1: 64-6 (January, 1952); *cf.* B.I.P.C. 21: 400.

The author presents a review of the literature which appeared during 1951 on the application of ion exchange to analytical chemistry. The use of this technique with cellulose is reported. 84 references. M.W.

KUNIN, ROBERT. Ion exchange. Ind. Eng. Chem. 44, no. 1: 79-84 (January, 1952); *cf.* B.I.P.C. 21: 400.

The industrial applications of ion exchange have continued to increase during 1951. The literature in this field is reviewed and includes several references to deionization, recovery, purification and preparation of various products, and waste treatment. 466 references. M.W.

LARCH

NISHIDA, K., and WATABE, T. Effect of seasoning on the sulfite digestion of *Larix kaempferi* Sarg. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 7: 539-52, 626 (December, 1951). [In Japanese; English summary]

When *Larix kaempferi* Sarg. (karamatsu or larch) is seasoned as sapwood and heartwood sawdust over a long period (i.e., 6-12 months), the galactan and mannan contents are increased, but the total cellulose is somewhat decreased, and the pentosan and lignin is almost unchanged. In the sulfite cooking of the sawdust, the pulp yields and total cellulose contents are greatly increased; the heartwood pulp is darkened considerably, and its lignin content is increased. 11 tables, 14 figures, and 21 references. E.G.S.

LIGNIN

APENITIS, ALFRED, ERDTMAN, HOLGER, and LEOPOLD, BENGT. Studies on lignin. Part V. The decay of spruce wood by brown-rotting fungi. Svensk Kem. Tid. 63, no. 9: 195-207 (1951). [In English]

Sprucewood sawdust was decayed by the action of brown-rot fungi, such as *Coniophora puteana, Lentinus lepideus, Lenzites sepiaria,* and *Merulius lacrymans,* for various periods of time and extracted with benzene-alcohol (1:1), followed by water and 1% sodium hydroxide. The methoxyl, Klason lignin, Cross and Bevan cellulose, and pentosan contents of the decayed woods were determined. The results show that the cellulose is almost completely and uniformly decomposed, whereas the pentosans are relatively resistant to fungal attack. The residues of the evaporated benzene-alcohol extracts had methoxyl contents of 10-11%, approaching those of the Klason lignins, except the extract of the Lenzites-decomposed wood which contained only 5-6% methoxyl. The benzene-alcohol extracts possessed a relatively high copper number which did not change appreciably after hydrolysis. The hot-water extracts consisted largely of carbohydrate decomposition products, as indicated by their high copper numbers which increased considerably after hydrolysis. The methoxyl contents of the residues of the hot-water extracts varied from 3.1 to 3.9%. The alkali-soluble fractions increased about eight times those of the sound wood and remained constant when the loss of weight of the wood exceeded 20-30%. In general, the results indicate that the carbohydrates are rapidly decomposed and that the lignin, although enriched in the decayed wood, is also attacked and changed in various respects. 7 tables, 8 figures, and 19 references. F.E.B.

BJÖRKMAN, ANDERS. Lignin and other by-products of the cellulose industry in the United States and Canada; a summary of a report of a study trip in 1950. Svensk Papperstidn. 54, no. 22: 757-63 (Nov. 30, 1951). [In Swedish]

The report covers a nine-month period, six of which were spent at The Institute of Paper Chemistry and three in traveling to various mills and research laboratories. Reference is made to studies and developments of vanillin, hydrogenation of lignin, lignin plastics, the use of lignin in rubber in place of carbon black and of lignosulfonic acid as a tanning agent, an additive for cement and concrete, and a dispersing agent, etc. In addition, the activities of the Sulphite Pulp Manufacturers' Research League in Wisconsin, magnesium- and ammonium-base sulfite cooking, the manufacture of sulfite alcohol and yeast, lagooning of spent sulfite liquor and pipe-line systems for carrying it beyond points where it can cause harmful pollution, applica-

tions of cymene and conidendrin, the wood-saccharification plant at Springfield, Ore., and studies of the fundamental chemistry of lignin in various research laboratories of the United States and Canada are discussed. E.S.

KEILEN, J. J., DOUGHERTY, W. K., and COOK, W. R. Lignin-reinforced nitrile, Neoprene, and natural rubbers. Ind. Eng. Chem. 44, no. 1: 163-7 (January, 1952).

The use of coprecipitated lignin as a reinforcing agent for general-purpose synthetic rubber, GR-S, has been reported previously (*cf.* B.I.P.C. 19: 631-2). In the present report, information is presented on the reinforcement of other synthetic rubbers with lignin. In nitrile rubber, at the same volume loading, lignin gives higher tensile strengths than any other pigment, and Shore hardness, crescent tear resistance, and abrasion loss compare favorably. With Neoprene, tensile strength, tear resistance, elongation, and set are inferior to those obtained when three carbon blacks were used, although lignin produces greater hardness. These effects may be explained on the basis of differences in compatibility of the lignin molecule with the two rubbers since lignin is soluble in acrylonitrile, whereas chlorinated solvents are among the poorest solvents for lignin. Lignin coprecipitated with natural rubber gives excellent reinforcement, particularly with regard to tensile strength. In both nitrile and natural rubbers, high elongation and low modulus are combined with high tensile strength and high hardness. In addition, lignin has a lower specific gravity than any other common pigment and permits the production of lightweight rubber articles. The low pigmenting effect of lignin can readily be masked to give colored compounds which retain the strength values derivable from the lignin. 6 tables, 19 figures, and 6 references. M.W.

LINDGREN, BENGT O., and SAEDÉN, ULLA. Sulphonation and dissolution of the lignins of monocotyledons and dicotyledons with sulphite solutions at pH 4-7. Svensk Papperstidn. 54, no. 23: 795-8 (Dec. 15, 1951). [In English; German and Swedish summaries] *cf.* B.I.P.C. 22: 19-20.

Creighton, Gibbs, and Hibbert (*cf.* B.I.P.C. 14: 169) have shown that the lignins from gymnosperms, dicotyledons, and monocotyledons differ from one another. Lignin from gymnosperms is built up from phenylpropane monomers which, as a rule, have one methoxyl group, lignin from dicotyledons of monomers with both one and two methoxyl groups, and lignin from monocotyledons of monomers with no, one, or two methoxyl groups. To establish any difference amongst these three types of lignins with regard to their content of A groups (*cf.* B.I.P.C. 22: 19) and their rate of delignification, the authors studied the action of acid and neutral sulfite solutions at 135°C. on a typical dicotyledon, birch (*Betula verrucosa* Ehrh.) (I), and a typical monocotyledon, cana guadua (*Guada angustifolia* Kunth) (II), a grass from Ecuador which is closely related to bamboo. The experiments were carried out in the same manner as the previous ones with spruce (III) lignin. The results show that the major portion of the lignin from (II) is dissolved rapidly by neutral sulfite solutions, so that it differs in this respect from the lignins of (I) and (III). A comparison of the delignification of (I) and (III) shows that the two processes are very similar; it may therefore be assumed that the lignin of (I) is bound by the same type of benzyl etherlike linkages which were postulated for (III). The lignin from (I), like that from other dicotyledons, cannot be sulfonated to the same extent as (III) lignin by means of neutral sulfite solutions and, consequently, it appears that the lignins of dicotyledons have a lower content of A-groups than (III) lignin. 2 tables, 3 figures, and 12 references. E.S.

McDONALD, I. R. C., and CAMPBELL, W. G. Acid-soluble lignin. Nature 169, no. 4288: 33 (Jan. 5, 1952).

A preliminary report is presented on a method for the isolation of soluble lignin from acid hydrolyzates of wood and holocellulose and from the mother liquors of hemicellulose preparations from beechwood through the use of ion-exchange resins. 4 references. M.W.

READ, D. E., and PURVES, C. B. Isolation of penta- and 1,2,4,5-benzenetetracarboxylic acids from wood lignins oxidized with alkaline permanganate. J. Am. Chem. Soc. 74, no. 1: 120-3 (Jan. 5, 1952).

The following samples, after exhaustive oxidation with alkaline potassium permanganate, gave the above crude benzenepolycarboxylic acids in the amounts noted: solvent-extracted sprucewood (0.14% on the lignin); the periodate, Willstätter, and Klason lignins therefrom (0.8, 1.0, and 2.4%, respectively); and a commercial alkali lignin from poplar (3.6%). The alkali lignin was the only sample which yielded mellitic acid (0.2%). These results suggest that aromatic units in lignin underwent an increasing amount of nuclear condensation as the conditions of the isolation from the wood became more drastic. 3 tables and 27 footnotes. E.S.

READ, D. E., and PURVES, C. B. Separation of benzene hexa-, penta-, and the three isomeric tetracarboxylic acids and their methyl esters. J. Am. Chem. Soc. 74, no. 1: 116-19 (Jan. 5, 1952).

The drastic oxidation of graphite, coal, wood lignin, and similar materials frequently produces mixtures of the higher benzenecarboxylic acids which are difficult to separate, particularly when the available amounts are limited. Certain published information about these acids was checked and used to separate them systematically by means of barium salts insoluble at pH 10 and by means of the varying degree to which they were esterified by hot 3% methanolic hydrogen chloride. Somewhat more advantageous methods of preparation were found for benzenepenta- and 1,2,3,4-tetracarboxylic acids. The acidic, crystalline ester of the 1,2,3,5-isomer proved to be a trimethyl ester, and not the trimethyl derivative previously reported by Bamford and Simonsen (*cf.* J. Chem. Soc. 97: 1904-9 [1910]). 2 tables and 28 footnotes. E.S.

WACEK, A., and HLAVA, J. Comparative investigations of organosolv lignin fractions of European spruce which are precipitable by water. Monatsh. 82, no. 6: 1046-58 (Dec. 15, 1951). [In German]

Lignin was extracted from pre-extracted sprucewood with methanol, ethanol, dioxane, acetone, and methyl ethyl ketone in the presence of small amounts of acid catalysts, and the lignins were isolated, in yields of about 10% of the wood, by pouring the concentrated solutions into water. The lignin preparations were analyzed for the percentages of methoxyl, active hydrogen and carbonyl, and terminal methyl (CH_3C-) groups by oxidation with chromic acid and determination of the acetic acid formed. The results, in the order as given above, were as follows: for methanol lignin, 17.47, 0.67, 3.47, 1.74; for ethanol lignin, 16.31, 0.65, 3.57, 4.89; for dioxane lignin, 15.44, 0.80, 6.28, —; for acetone lignin, 14.5, 0.74, 5.93, 3.72; for methyl ethyl ketone lignin, 14.08, 0.71, 5.66, —. The results indicate that one mole of alcohol reacts with a lignin building stone of a molecular weight of 430. 4 tables and 33 footnotes. F.E.B.

LIME AND LIMESTONE

VRANIAN, HENRY, and NICKERSON, ROBERT D. Flash drying of lime kiln feed. Tappi 35, no. 1: 11-13 (January, 1952).

Flash drying of calcium carbonate lime-kiln sludge was used for the first time to supplement the capacity of an existing rotary kiln in a pulp mill. The carbonate product is delivered from the drier to the kiln at a controlled moisture content. Most of the former drying zone in the kiln is now available for calcining, which results in increased lime-burning capacity. The heat for the drier is drawn from the plenum chamber of the lime-kiln stack. Under the present condition the drier does not use all the available heat and some is by-passed to the stack. As a result of drying, the lime-burning capacity has been increased by 40%, fuel consumption reduced by 38%, and make-up lime reduced by 37%. The use of a secondary dust collector is considered advisable and should reduce the make-up lime further. 1 table, 2 figures, and 2 references. E.S.

MACHINERY

ANON. Suppliers to the paper trade. Paper-Maker (London) 122, Annual no.: 18, 20-4, 33-4, 36-8, 40, 42, 44, 46, 51-2, 54, 57 (1951).

A number of British firms which supply the papermaking industry discuss the progress and developments in machinery and materials during 1951. Numerous illustrations. E.S.

MACHINERY—BARK PRESS

PAPER MILL EQUIPMENT LIMITED. Interesting Swedish equipment. Pulp Paper Mag. Can. 52, no. 13: 167-8 (December, 1951).

The Waplan bark press, developed in Sweden, employs heavy-built, vertical, spirally-grooved press rolls for continuous removal of water and simultaneous shredding of bark. One or a series of presses may be used, and 45-55% dryness is obtained and found satisfactory for burning. Another piece of equipment developed in Sweden, the Waplan all-welded barking drum, has proved to have low power consumption and maintenance cost. A feature of the design is the use of hydraulic bearings. M.W.

MACHINERY—CONVERTING MACHINERY

BAR-PLATE MFG. CO., *New Haven, Conn.* Diecutting jackets help increase production. Am. Boxmaker 41, no. 1: 26, 48 (January, 1952); Boxboard Containers 70, no. 709: 42 (January, 1952).

A new boxmaker turnbuckle-type cutting and creasing jacket is described. It is designed primarily for two-color nonconverted presses and extends the usefulness of these presses by permitting the second cylinder to be used for cutting and creasing, while the printing is done on the first cylinder. It is easily installed and eliminates costly conversion which destroys a press for any subsequent two-color printing use. It may also be used on single-color presses. 4 and 5 figures, respectively. M.W.

MACHINERY—CONVEYORS

FARRIS, M. J. Wood preparation, conveyors and chippers. Paper Mill News 75, no. 3: 56 (Jan. 19, 1952); Southern Pulp Paper Manuf. 15, no. 1: 42 (January, 1952).

The use of a flooded-type conveyor is described, and some data are given which indicate that in many instances chip-preparation efficiency could be improved. M.W.

STEPHENS-ADAMSON MFG. CO., *Aurora, Ill.* Conveyor elevator for wood chips. Paper Mill News 75, no. 3: 62, 64 (Jan. 19, 1952).

Two types of the Redler conveyor-elevator are described. 5 figures. M.W.

THILMANY PULP & PAPER COMPANY. New conveyor system for wood handling at Thilmany Paper Co. Paper Mill News 75, no. 3: 44, 85 (Jan. 19, 1952); *cf.* B.I.P.C. 22: 211.

The design and operation of the conveyor system which was built by the Link-Belt Co., Chicago, for Thilmany is described. 5 illustrations. M.W.

ZABRISKIE, EMMET W. Conveyor system cuts handling costs. Paper Mill News 75, no. 3: 59-60 (Jan. 19, 1952).

The conveyor system of National Paper Products Co. which includes two automatic carton sealers and an automatic control system is described. 3 figures. M.W.

MACHINERY—DOCTORS

ANON. Good roll doctoring—a matter of prevention rather than cure. Paper Trade J. 34, no. 4: 20 (Jan. 25, 1952).

Some notes on the proper maintenance of Vickery Hi-Angle and Hi-Flex doctors are given. 3 illustrations. M.W.

MACHINERY—DRYERS

ANON. The Ruberoid Co., Mobile, Ala., drains felt machine with Cochrane system. Southern Pulp Paper Manuf. 15, no. 1: 36-8 (January, 1952); *cf.* B.I.P.C. 21: 646.

In the original description of the new Ruberoid roofing-felt mill at Mobile, the condensate-drier system of the paper mill was credited to another manufacturer, although actually the Cochrane CB system is used. The construction, installation, and advantages of the unit are described. 3 figures. E.S.

MACHINERY—ELECTRIC EQUIPMENT

GENERAL ELECTRIC REVIEW. Research and engineering progress, 1951. Gen. Elec. Rev. 55, no. 1: 3-57 (January, 1952); *cf.* B.I.P.C. 21: 403-4.

The highlights in electrical developments during 1951 are presented in a profusely illustrated review. No special section on paper is included, although the fact is mentioned that the demand for paper continues high and that many high-speed, sectional paper machines are being installed, under construction, or on order (p. 32). E.S.

MEYER, H. R. Preventive practices in electrical inspection. Tappi 35, no. 1: 132-6A (January, 1952).

The importance of a systematic maintenance program (cleaning, lubrication, and regular inspection of motors and electronic control equipment) is emphasized; the need for the keeping of accurate records and their periodic analysis is stressed. 6 figures and 11 references. E.S.

MACHINERY—FELTS

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, INC. *Pacific Coast Division.* Clothing talkfest; ideas on wire and felt care. Pulp & Paper 26, no. 1: 56, 58 (January, 1952).

A round-table discussion on wire and felt life disclosed that the introduction of nylon into felts has permitted the speeding up of paper machines from 33 to 40%, while felt life increased 100%. With regard to wires, no such timely discovery to offset their inevitably reduced life as a result of higher machine speeds has been made, although wires as a rule (about 80%) do not wear out, but are removed because of some kind of damage. Several suggestions for improving wire life at high speeds are given. E.S.

MACHINERY—FILTERS

MILLER, S. A. Filtration. Ind. Eng. Chem. 44, no. 1: 63-8 (January, 1952); *cf.* B.I.P.C. 21: 404.

The author reviews the literature on filtration theory and equipment which was published during the past year. The section dealing with industrial wastes includes references to the filtration methods for paper-mill white water. 1 illustration and 172 references. M.W.

MACHINERY—LAY BOYS

ERIE LAY-BOY COMPANY, LTD., *Erie, Pa.* Maxson pioneers in sheet handling problems. Southern Pulp Paper Manuf. 15, no. 1: 82-4 (January, 1952).

The development of the different types of automatic layboys with overlapping delivery for the handling of paper and board sheets from high-speed machine operations and cutters is described. 4 illustrations. E.S.

MACHINERY—MIXING APPARATUS

RUSHTON, J. HENRY. Mixing. Ind. Eng. Chem. 44, no. 1: 88-91 (January, 1952); *cf.* B.I.P.C. 21: 404.

Several references to heat transfer and continuous flow systems are included in this review of the literature for 1951 on mixing. 1 illustration and 17 references. M.W.

MACHINERY—PAPER MACHINE—YANKEE TYPE

CRAIG, F. A. Practical paper making. No. 10. The M. G. machine. Paper & Print 24, no. 4: 420, 422, 424, 426 (Winter, 1951); *cf.* B.I.P.C. 22: 174.

The development and modifications of the Yankee machine are described and the qualities of M. G. papers are summarized. M.W.

MACHINERY—SLITTERS AND WINDERS

CAMERON MACHINE COMPANY. Constant web tension. Am. Pressman 62, no. 1: 18, 58 (December, 1951).

Two types of constant web-tension equipment are described. Both are designed tc compensate for changes in the speed of the machine to which they are attached and can be used with paper, board, or fabrics. 2 illustrations. M.W.

MACHINERY—VATS

GOLDSMITH, PHILIP H. Board machine vats. Paper Trade J. 134, no. 3: 30, 32 (Jan. 18, 1952); Pulp Paper Mag. Can. 53, no. 2: 61-2 (February, 1952).

The design and operation of counter-flow vats, direct-flow vats with a fixed circle, direct-flow vats with an adjustable circle, and vats with a vacuum cylinder mold are described. 1 figure. M.W.

MARKET RESEARCH

COWAN, JOHN M. Flexible packaging group disputes findings of government survey. Am. Paper Merchant 49, no. 1: 14 (January, 1952); Am. Paper Converter 26, no. 2: 14, 59 (February, 1952).

The conclusions which were based on a sales test of fresh spinach and kale sponsored by the U. S. Department of Agriculture are discussed. The sales test provided information on the economic advantages of prepackaging over bulk-marketing methods. The point disputed by the National Flexible Packaging Association concerns a conclusion that produce sells better in unprinted than in printed bags. The Association maintains that, on the basis of one test, such a generality is invalid, because many factors enter into the consumer appeal and saleability of a product in printed transparent bags. These factors include the quality and appearance of the product, price, packer's reputation, design, color scheme, and printing. M.W.

MATERIALS HANDLING

ANON. How to make most of storage height. Paper Ind. 33, no. 10:1193 (January, 1952).

Different space-saving methods of stacking units in rolls or on skids and pallets are outlined, with particular reference to a powered lift truck with a hydraulic, rotating paper-roll clamp which is designed for tiering rolls in either the vertical or horizontal position. 1 illustration. E.S.

BOLDUC, T. Keeping truck body flush with loading dock; a 1950 gadget competition entry. Pulp Paper Mag. Can. 52, no. 13: 100 (December, 1951).

The installation of brackets is described which will keep the body of trucks during loading flush with the dock at all times, which is of particular convenience when the materials are handled by power-driven lift trucks, or paper rolls are rolled off and on. 3 sketches. E.S.

THE BRITISH PACKER. Handling of palletised goods for road and rail transport. (No. 3). Brit. Packer 13, no. 12: 26-7, 37 (December, 1951); *cf.* B.I.P.C. 22: 338.

Seven demonstrations of mechanical handling techniques with a fork lift truck are described. 4 figures. M.W.

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Materials Handling Committee.* The "Cary-Lift" yard type extended reach fork loader. Pulp Paper Mag. Can. 52, no. 13: 118 (December, 1951).

A hydraulic lift unit has been especially designed for outside yard work and rough terrain. An exclusive feature of the unit are the lifting forks or arms which can reach forward a distance of four feet through its entire

travel height of 14 feet to permit the loading of the far side of docks, railway cars, trucks, or stock piles. Buckets can be attached for handling sand, gravel, snow, etc. 1 illustration. M.W.

CONVEYAIR LTD., *Pulp Division, North Vancouver, B.C.* Pneumatic chip handling. Can. Pulp Paper Ind. 5, no. 1: 11, 34 (January, 1952).

The construction and advantages of the Conveyair pneumatic feeder system of chips from trailers or other transportation mediums to silos or bins are described, with special reference to the equipment installed at the Harmac mill of MacMillan & Bloedel in B.C. 2 illustrations. E.S.

FRASE, K. W. What the materials handling engineer can do for materials handling. Paper Mill News 75, no. 3: 54, 56 (Jan. 19, 1952).

Within a plant a materials-handling engineer should strive to conserve time and space, keep materials mobile, reduce shipping costs, improve labor relations, and reduce industrial accident rates. The phase of material handling that requires the greatest improvement at the present time involves interplant movements. Three things which should be accomplished in this regard are: (1) lower freight rates for shipment of both loaded and empty pallets; (2) pallet pools available to all shippers at a rate which they can afford; and (3) standardization of carrier equipment, to accommodate unit-load handlings. M.W.

HANSON, BERT. Improving material handling methods. Paper Mill News 75, no. 3: 74, 76 (Jan. 19, 1952).

The various steps in a plant-wide survey and a material-handling area study, which comprise the improvement program, are outlined, and the functions of the committee in charge of directing the program are summarized. M.W.

KIMBERLY-CLARK CORPORATION. How fork trucks handle pulp and paper at Kimberly-Clark mill. Paper Mill News 75, no. 3: 48, 50 (Jan. 19, 1952).

The use of fork trucks in handling pulp and finished paper is described. 7 illustrations. M.W.

PAPER MILL NEWS. Modern wood handling on West Coast. Paper Mill News 75, no. 3: 46 (Jan. 19, 1952).

The design and arrangement of wood-handling equipment for logs 20 to 24 feet in length are described. 1 diagram. M.W.

PAPER MILL NEWS. More material handling equipment in pulp and paper mills. Paper Mill News 75, no. 3: 26, 28 (Jan. 19, 1952).

The results of a survey addressed to the engineers in charge of material handling in several pulp and paper mills of the United States show a continuing trend toward more mechanization in material handling and the widespread use of modern methods and equipment from the woodyard throughout the pulp and paper mill. This survey is a follow-up of an earlier similar questionnaire which is republished in full. 1 table. M.W.

PAPER MILL NEWS. Unit load system aids material handling. Paper Mill News 75, no. 3: 36, 38 (Jan. 19, 1952).

The unit-load system is now being used by R. R. Donnelly & Sons, Chicago, for shipping the printed signatures for *Life* magazine. The Robert Gair Co. has realized substantial savings through the use of palletized unit loads for the shipment of bag chemicals. The unit load with expendable pallet known as the Load Lox, which was developed by the Addison-Semmes Corp., is described. 4 illustrations. M.W.

PARLON, W. L. Factors affecting material handling. Paper Mill News 75, no. 3: 80 (Jan. 19, 1952).

Three factors which are involved in material handling, distance, speed, and plant arrangement, are discussed, and the importance of analyzing these factors for each individual case is emphasized. M.W.

PEARSON, LESLIE S. Modernization for material handling of raw and semi-raw materials—the payoff. Paper Mill News 75, no. 3: 30, 32 (Jan. 19, 1952).

The author describes the approach of the S. D. Warren Co. to the establishment of modern materials-handling techniques and practices. 5 illustrations. M.W.

RHODES, DONALD C. Training material handling personnel. Paper Mill News 75, no. 3: 52 (Jan. 19, 1952).

For an effective type of training, the decentralization of the training program is recommended, and emphasis is placed on the importance of selling the training program to employees to develop their interest and co-operation. M.W.

SPEAKER, RICHARD L. Materials handling. Ind. Eng. Chem. 44, no. 1: 85-8 (January, 1952); *cf.* B.I.P.C. 21: 408.

The author reviews the literature on materials handling for 1951 which, for the most part, deals with equipment improvement and specific case histories. References to improvements in motorized lift trucks, palletizing materials and techniques, conveyors, and monorails and hoists are included. 7 figures and 23 references. M.W.

METERS AND RECORDERS

FAGEN, WILLIAM E. Winning the laboratory war against moisture. Ind. Labs. 3, no. 1: 36-7 (January, 1952).

The author describes some of the varied industrial uses for the dielectric and resistance types of moisture meters which are manufactured by the Tagliabue Instruments Division of Weston Electrical Instrument Corp. The resistance-type instrument has been used successfully for testing the moisture content of paper and paperboard. 6 illustrations. M.W.

MICROFILMS

OFFENHAUSER, WILLIAM H., JR. Preservation by microfilm. Special Libraries 42, no. 10: 369-73, 397-400 (December, 1951).

Microfilm provides a suitable medium for the secondary preservation (preservation of a facsimile of an original) of papers and documents. The

various processes and materials which are involved in the preparation of microfilm are described, and the physical and chemical changes to which they are subject are discussed. Storage of microfilm should be in three stages: (1) "dead" storage for the originals under suitable conditions (constant temperature of 50°F.), (2) "live" storage under the best possible conditions for intermediate copies which are used to make release prints, and (3) the best possible day-to-day storage for release prints. In this way the originals are handled only once in several years when intermediate copies are needed. M.W.

MICROSCOPY

ARMITAGE, F. D. The microscope and its application in the papermaking and printing industries. Part 6. Paper Making and Paper Selling 70, no. 3: 23-32 (Autumn, 1951); *cf.* B.I.P.C. 19: 95-6.

The following methods for cutting sections of paper for microscopical examination are described: the paraffin method, the celloidin method, the combined cellulose nitrate and wax embedding method, the elder-pith method, and a method in which the paper to be sectioned is enclosed in a cellophane envelope which is embedded in paraffin wax. 13 figures. M.W.

MILL CONTROL

FOSTER, C. E. Quality control in the manufacture of paper food containers. Tappi 35, no. 1: 110-12A (January, 1952).

The author outlines in a general way the methods of quality control in the conversion of single-service, disposable, sanitary containers for moist and liquid foods and sanitary closures for glass containers for fluid milk. Of all the materials employed, paper is the least well controlled with regard to uniformity; yet uniformity is the most important property for any profitable production operation which depends upon low cost and large volume for success. The paper industry must learn to apply its ability to the problem of uniformity, in the same way that it has made great strides in increased tonnage per man- and machine-hour. 2 tables. E.S.

MILL MANAGEMENT

BOXBOARD CONTAINERS. Maintenance pays dividends. Boxboard Containers 70, no. 709: 6-7 (January, 1952).

To illustrate various approaches to the problem of maintenance in corrugated plants, the planning, execution, and follow-up of some effective programs are described. M.W.

MOVING PICTURES

BOWATER PAPER CORPORATION LTD. Bowater's festival film on paper making. Paper Making and Paper Selling 70, no. 3: 39-40 (Autumn, 1951).

A film which was sponsored by Bowater for the Festival of Britain is described. It tells the story of the production of paper from the 16th century to the present. 3 illustrations. M.W.

MULBERRY

MAEMATSU, R. Japanese papermaking materials. Part 1. J.

Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 7: 585-92, 630 (December, 1951). [In Japanese; English summary]

Chemical analyses were made of kozo plants (paper mulberry) grown in different soils and under various environmental conditions. 8 tables and 27 references. E.G.S.

NEW ZEALAND FLAX

HAARER, A. E. Phormium fibre. Paper Making and Paper Selling 70, no. 3: 20-2 (Autumn, 1951).

Phormium tenax Forst. is a hard fiber which is used in England as a substitute for jute in cheap ropes and binder twines and in papermaking. Supplies are imported from New Zealand, the island of St. Helena, and the Azores. There is a shortage of New Zealand Phormium fiber, because it is not produced in the high yields formerly obtained, and because it is used domestically as a substitute for jute. The current high prices on the British market, however, would permit the profitable cultivation of it in Britain where several districts are suitable for its growth. The methods of cultivation and extraction of the fiber which could be used are described. 3 illustrations. M.W.

OAK

ROTHROCK, C. W., JR., and NOLAN, W. J. Further studies on the alkaline pulping of scrub oak. Tappi 35, no. 1: 29-37 (January, 1952).

The effect of variations in the percentage of sulfidity of the cooking liquor and of additions of black liquor to the cooking liquor are shown. The range of 30 to 40% sulfidity is most suitable for producing an easily bleached pulp from scrub oak. Other necessary conditions are 16% total chemical and a liquor concentration of 35 grams per liter (expressed as sodium oxide). Steam pressure should be 115 p.s.i., 1.0 hour to pressure and 1.5 to 2.0 hours at maximum pressure. Pulps require 7.0 to 8.0% available chlorine to produce a G.E. brightness of 75 in a single stage. Additions of black liquor to the cooking liquor cause an immediate disappearance of almost half of titratable sulfide. The black-liquor addition results in a milder cook with higher screenings than when no black liquor is used. 6 tables and 1 reference. E.S.

PACKAGING

PAUL B. DICKMAN FARMS, *Ruskin, Fla.* Profit in prepackaged produce. Food Eng. 24, no. 1: 96-8, 184 (January, 1952).

A successful method of prepackaging fresh vegetables includes immediate cleaning, chilling, and cold storage at the farm after harvesting. Because of the insulation properties of cellophane and pulpwood trays, the vegetables are cooled to below 40°F. before they are wrapped, packaged, heat sealed, and placed in master cartons, and transported from farm to market in mechanically refrigerated trailers to insure against flavor losses, carbohydrate breakdown, and spoilage. 7 figures and 2 references. M.W.

F & F LABORATORIES, INC., *Chicago.* Sundae in a bag. Modern Packaging 25, no. 5: 102-4, 180, 183, 185 (January, 1952).

A new line of ice-cream sundae toppings, under the trade name of Goop, is being merchandised in convenient four-serving units. The package consists of an inner sheet of polyethylene laminated to an outer cellophane sheet which is printed on its underside. Polyethylene was selected as the packaging

medium because it successfully resists the fat content present in the toppings, can withstand normal handling conditions, tears open cleanly, and retains a good "handle," or feel, over a wide range of temperatures. The packaging operation, which is completely automatic, is described. 6 illustrations. M.W.

HOGANCAMP, I. R. How to save wood. Modern Packaging 25, no. 5: 112-15 (January, 1952).

Some examples are given of packaging methods which can be used with very large items to conserve lumber through the substitution of plywood and fiberboard. Considerable weight and cost savings can also be effected in this way. 9 illustrations. M.W.

KRAFT, A. A., and AYRES, JOHN C. Post-mortem changes in stored meats. IV. Effect of packaging materials on keeping quality of self-service meats. Food Technol. 6, no. 1: 8-12 (January, 1952).

The effects of various packaging materials on color, weight loss, and surface bacterial growth of fresh and cured meats were studied. It was found that the ability of materials to retain carbon dioxide within the atmosphere of the package is related to improved keeping quality. Of various packaging materials tested, a laminate of aluminum foil and Pliofilm was found to be most effective in retarding spoilage. Cellophane and waxed paper permitted the greatest weight losses and were least effective in preventing dehydration. 5 figures and 19 references. M.W.

MODERN PACKAGING. Cannon packaged textiles. Modern Packaging 25, no. 5: 86-91, 169, 171 (January, 1952).

The Cannon Mills Company, manufacturer of household textiles, was the first in its field to recognize the merchandising potentialities of the factory prepack for textile items. The package currently in use for Combspun percale sheets consists of a U-board base with a sealed cellophane overwrap. Highest-quality percales are cellophane-wrapped and packaged in setup boxes. The company has also stimulated gift packaging through the use of colorful and original boxes and overwraps for its towels, sheets, and hosiery. 16 illustrations. M.W.

MODERN PACKAGING. Prospects. Modern Packaging 25, no. 5: 75-83, 175 (January, 1952); *cf.* B.I.P.C. 21: 410.

The supply situation during 1952 of the following packaging materials is discussed: paper, metals, glass and closures, cellophane, plastics, and other materials. With the exception of metals and polyethylene which are in demand for military uses, all packaging materials are now available in adequate to good supply. 2 tables and 9 figures. M.W.

PACKAGING ASSOCIATION OF CANADA. Scouting Canada's packaging supplies problems. Can. Chem. Processing 35, no. 12: 1023-4 (December, 1951).

The supply situation in regard to packaging materials for the coming year is discussed in the following articles: McVean, G. H. Metal containers, p. 1023; Hayes, F. C. Fibreboard containers, p. 1023-4; Bone, A. D. Flexible packaging materials, p. 1024; and Stephens, C. W. Paperboard boxes and cartons, p. 1024. M.W.

POTTINGER, S. R. Frozen Atlantic oyster investigations. Food Technol. 6, no. 1: 28-30 (January, 1952).

Some factors in the preparation of a quality pack of frozen oysters are discussed, including the choice of package. The requirements for a package of frozen oysters are more stringent than for most frozen foods, and if the packaging is largely a manual operation, a sealed moisture-vaporproof bag within a waxed carton is recommended. Cartons which are used without sealed bags should be overwrapped and are more suitable for automatic machine wrapping. 4 references. M.W.

PROCTOR & SCHWARTZ, INC., *Philadelphia.* New economical method of shipping fin pipes. Packaging Parade 20, no. 228: 84-5 (January, 1952); Fibre Containers 37, no. 1: 86-7 (January, 1952).

A new method (covered by U. S. patent 2,570,059, granted Oct. 2, 1951) of protecting fin or extended-surface pipe during shipment employs a low-cost cardboard cover tubing over the entire length of fin surface. The pipes do not require crates and can be stacked for shipping in the same manner as unfinned pipe. The protective tubing may be left on the pipe during installation and is easily removed by cutting lengthwise with a rip cord. 3 illustrations. M.W.

PAPER—COATED

HAMILTON, FRANK A. Machine coating problems. Pulp & Paper 26, no. 1: 64, 66 (January, 1952).

The author discusses problems encountered in the manufacture of machine-coated printing grades, coated on one or both sides and varying in weight from 50 to 100 lb./ream. The most important requirements of the body stock are a uniform smooth surface, uniform formation, good resiliency, smooth deckle edges, elimination of cockles, and a uniform moisture content of 5-6%. One of the most crucial problems at the coater is the correct adjustment of the draws; deposits forming on the coating rolls (felt hairs, grit, particles from broken wax or resin emulsions, etc.) must be closely and continually watched. The entire process calls for extreme care and close control of all variables. E.S.

MURTFELDT, F. H. A new opportunity in enamel papers. Am. Pressman 62, no. 2: 54-6, 72 (January, 1952).

The author describes the machine-coating process which was invented by Peter J. Massey and contrasts it with the brush-coating process. The coating equipment used at Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., for the Massey process is also described. 1 diagram. M.W.

PAPER—DEFECTS

DAY, FREDERICK T. Technical hints no. 1. The picking of coated papers. Paper & Print 24, no. 4: 394 (Winter, 1951).

The causes of and corrections for picking of coated paper surfaces are discussed. M.W.

MAKARIUS, THEODORE. More about paper distortion. Modern Lithography 19, no. 12: 52 (December, 1951); *cf.* B.I.P.C. 22: 261.

The misregister which is due to paper distortion around the cylinder is discussed. Although the remedy for this trouble is found in changing the cylinder circumference, it is better to maintain a standard setting of the cylinder diameter. It is also important that the printed image match the size of the image on the plate, and if this is checked at the time of printing, distortion of the sheets can be minimized. M.W.

PAPER—OPACITY

GIERTZ, HANS WILHELM. The opacity of paper pulps. III. Sulfite pulps. Svensk Papperstidn. 54, no. 22: 769-75 (Nov. 30, 1951). [In Swedish; English and German summaries] *cf.* B.I.P.C. 21: 711-12.

The influence of sulfite cooking on the opacity of pulps prepared under widely varying cooking conditions was studied. The pulps were bleached with acid chlorite solutions, and the specific scattering coefficient (*cf.* B.I.P.C. 21: 338) was determined on sheets made from both wet and dried pulps. The details of the cooking conditions and analytical data are given in two tables. It is a well-known fact that the opacity of a pulp increases during the sulfite cook. However, it was found that the opacity, irrespective of cooking conditions, is closely related to pulp yield after cooking and bleaching. This is probably the result of the selective dissolution of the amorphous interfibrillar hemicelluloses which causes the formation of hollow spaces between the fibrils; these hollow spaces scatter the light in the fiber wall. In addition, the hemicelluloses act as an adhesive which contributes to the densification of both the paper and the individual fibers. As a result of these two factors, the dissolution of the interfibrillar substance increases the opacity of the pulp. A diagram illustrates the combined effect of lower yield and higher opacity. The most important increase in opacity during sulfite cooking occurs in the range of 40-50% yield. The fact that the decrease in yield from 70 to 55% does not influence the opacity to a great extent is interpreted by the assumption that the responsible hemicelluloses are not located within the fibers, but between them in the middle lamella. During beating the opacity decreases more rapidly in the case of strong than of soft pulps; after beating there is a linear correlation between the specific scattering coefficient and the density of the paper. However, this correlation varies for different kinds of pulp. Papers prepared from strong pulps are more bulky than those of identical opacity made from soft pulps. An increase in density of 0.1 unit corresponds to a drop in the specific scattering coefficient of 60 units, and this holds for all types of sulfite pulps. When the beating process is performed in the same manner, there is also a very close relationship between opacity and breaking length. This correlation is independent of the type of pulp or the degree of beating, and an increase of 1000 m. in breaking length corresponds to a decrease in the specific scattering coefficient of 30 units. 2 tables, 6 figures, and 10 references. E.S.

PAPER—PERMANENCE

STEINBURG, SOL. Preservation of original documents. Special Libraries 42, no. 10: 368, 390-4 (December, 1951).

Lamination with a suitable plastic is recommended for the protection of paper from molds and fungi, as well as for providing extra strength to withstand handling. Cellulose acetate seems to be the most suitable plastic for this purpose. An impregnated laminate is preferable to a sandwich type. For the storage of both laminated and unlaminated sheets an inert atmosphere at a temperature of about 70°C. and 45% R.H. provides the best protection. For laminated sheets sufficient plasticizer may be introduced to maintain

equilibrium between the partial pressures of plasticizer vapor in the plastic and in its atmosphere. M.W.

PAPER AND PULP INDUSTRY

AGGARWALA, O. P. U. S. paper industry. Indian Pulp and Paper 6, no. 5: 249-50 (November, 1951).

A summary of the current situation in the paper industry in the United States is presented, including a brief description of the recent developments in the utilization of spent sulfite liquor. M.W.

ANON. The Australian forest industry. Norsk Skogind. 5, no. 11: 332-7 (November, 1951). [In Norwegian]

Statistical information on the domestic production, imports, and consumption of timber, chemical and mechanical pulp, paper, and board in Australia is given. Exports have not yet played a significant role. The important mills, their capacities, and the number of their machines are listed. 8 tables. E.S.

ANSTRIN, H. Changes in the pulp and paper industry of the world from 1937 to 1949. Svensk Papperstidn. 54, no. 23: 799-811 (Dec. 15, 1951). [In Swedish]

The changes in production, consumption, exports, and imports of North America and Europe for the indicated period are discussed. The per capita consumption of the United States in 1950 was 128% higher than in Sweden, which represents the highest consumption in Europe; England's and Germany's figures lie considerably below the prewar amounts; no data are available for eastern Europe and Asia. The importance of waste-paper regeneration in the European economy is stressed. 9 tables. E.S.

KOTTE [HANS] Glancing across the ocean. Allg. Papier- Rundschau no. 18: 775-7; no. 20: 852-5; no. 21: 892-5; no. 22: 937-9; no. 23: 979-80 (Sept. 26, Oct. 26, Nov. 12, 26, Dec. 12, 1951). [In German] *cf.* B.I.P.C. 22: 308-9.

Excerpts from the book "The pulp and paper industry in the USA," published by the Organisation for European Economic Co-operation are given, including tables, illustrations, and diagrams. E.S.

POULIOT, L. J. Canada's top manufacturer at record level in 1950. Pulp Paper Mag. Can. 52, no. 13: 74-84 (December, 1951); Newsprint Service Bur. Bull. no. 408: 2-3, 5-7 (January, 1952); *cf.* B.I.P.C. 21: 565-6.

The pulp and paper industry again showed gains in 1950 and established new records for all principal statistics relating to the industry. The gross value of products was $954,137,651, an increase of 14.1% over 1949, and the net value of $511,142,983 was 20% over 1949. Total pulp production was 8,473,014 tons, and the output of paper and paperboard reached 6,812,035 tons, increases of 7.9% and 4.2% in volume and 12.9% and 10.7% in value, respectively. Pulpwood production showed an increase of 8.6% in volume and 5.6% in value compared with 1949. During 1950, as in 1949, 123 mills were in operation. Increases in wood-pulp exports amounted to 18.5% in quantity and 21.6% in value, and the total value of paper and paper goods exported in 1950 showed an increase of 10% over 1949. Newsprint paper

represented 96.1% of this value. The pulp and paper industry held first place among Canadian industries in regard to gross value of products and wage and salary distribution in 1949, and for many years has been a principal contributor to the Canadian balance of trade. 14 tables and 4 figures.
M.W.

RAYON AND SYNTHETIC TEXTILES. The pulp situation. Rayon and Synthetic Textiles 33, no. 1: 31, 53-4 (January, 1952).

The cutbacks in filament yarn production which were brought about by the marked slowdown in the demand for rayon and acetate fabrics during the last part of 1951 and the completion of new plants for the production of dissolving pulp will result in more plentiful supplies of wood pulp for the manufacture of rayon and acetate yarn in the months ahead. Cotton linters will also be in good supply. This situation will permit mills which produce dissolving pulps and companies which supply linters pulp to increase their inventories and to fill backlogs of orders. Pulp production in excess of domestic demand will find a ready market abroad. The new production facilities which were started in 1951 will probably be completed during 1952, and there is a possibility of indefinite postponement or cancellation of those not already underway. However, the production of dissolving pulp from wood resources in Mexico and from bagasse in sugar-producing countries is still being investigated. 2 illustrations. M.W.

WRIGHT, C. E. Pulp, Florida's new king. Am. Forests 58, no. 1: 12-13, 43-5 (January, 1952).

The current expansion of pulp mills in Florida is described, and the questions of current and potential markets for the additional kraft paper and pulp and present and potential supplies of pulpwood are considered. 3 illustrations. M.W.

PAPER AND PULP INDUSTRY—EDUCATION

ANON. Opening of the new school of paper-making of the Province of Quebec. Pulp Paper Mag. Can. 52, no. 12: 86-7; Quebec's Ecole de Papeterie. *Ibid.* no. 13: 91-4 (November, December, 1951).

The opening of a miniature pulp and paper mill at the Ecole de Papeterie, Three Rivers, Que. is announced. In the second reference a description of the school and its installations is presented. 1 illustration in the first, and 5 in the second reference. M.W.

FAIR, A. E. HAROLD. The new challenge. Paper Mill News 75, no. 4: 10, 12, 14 (Jan. 26, 1952); Tappi 35, no. 2: 12A, 14A, 16A, 18A (February, 1952).

Various factors, including seniority restrictions, the narrowing of the scope of the individual worker, and the general reduction of opportunity to be trained, have contributed to the present shortage of trained help. Company training programs can help the situation to a certain degree, but an industry-wide program would be most effective. The author suggests the organization of a committee to be sponsored jointly by TAPPI and the American Pulp and Paper Mill Superintendents Association which would develop employee training. Two possible approaches to the problem would be the intermill exchange of technical personnel and the establishment of a training school, in the form of a small mill, for practical operators.
M.W.

PAPER AND PULP INDUSTRY—ESTIMATES AND COSTS

EWING, LLOYD. Equipment Cost Subcommittee report. Tappi 35, no. 1: 100-1A (January, 1952).

In an effort to determine the feasibility of a program by TAPPI to assemble cost data on the major elements of pulp- and papermaking equipment, the factors involved in such a study, and the value of such data to the industry as a whole, one classification of equipment (savealls) was selected, and a preliminary survey was made. The methods for obtaining the data and the reliability and usefulness of the results are discussed. It is emphasized that the study is in no way intended as a basis of comparison of the various types of equipment. The entire project is one of considerable magnitude, and comments from members regarding the desirability of the undertaking are solicited. 1 diagram. E.S.

PAPER AND PULP MILLS

ANON. Hudson Pulp and Paper Corporation opens new Palatka, Florida mills with county-wide fete. Southern Pulp Paper Manuf. 15, no. 1: 52, 54, 56, 58 (January, 1952); Tappi 35, no. 1: 68A, 70A (January, 1952); Paper Ind. 33, no. 10: 1148-9 (January, 1952); *cf.* B.I.P.C. 22: 344.

Reference is made to the dedication of the second unit at the Palatka mill which will double the plant's capacity to 400 tons of unbleached kraft pulp, 85% of which will be converted in the fully integrated plant to kraft wrapping, butchers' paper, gummed sealing tape, grocery bags and sacks, and multiwall bags for industrial purposes. The principal feature of the new addition is a 234-inch Pusey & Jones Fourdrinier paper machine. The contents of the different references are not exactly alike; the most complete description of the dedication ceremonies and the mill is given in Southern Pulp Paper Manuf., supplemented by six illustrations. E.S.

ANON. The jubilee of Nyboholms Aktiebolag. Svensk Papperstidn. 54, no. 22: 784-7 (Nov. 30, 1951). [In Swedish]

To commemorate the 50th anniversary of the incorporation of the company, excerpts from a jubilee publication are given, in which the history of the present pulp and paper mills at Nyboholm and the handmade board mill at Qvill (originally built about 1750) is recorded. 4 illustrations. E.S.

EVANS, JOHN C. W. Industry expansion continues. Pulp Paper Mag. Can. 52, no. 13: 85-90 (December, 1951).

A summary of current expansion in Canadian mills and possibilities for future new mills is presented. 1 map. M.W.

KOTTE, HANS. A rapid trip to France to new and old paper mills. Allg. Papier-Rundschau no. 22: 934-7; no. 23: 974-8; no. 24: 1024-9 (Nov. 26, Dec. 12, 24, 1951). [In German]

The purpose of the trip was the desire to see an old handmade paper mill with the stampers still in operation, because one of the three participants of the trip plans the construction of a workable old paper mill in Germany for the benefit of and as a model for later generations. In addition to a visit to the modern newsprint mill at La Chapelle, the trip included the inspection of the handmade mills of Verger de Puymoyen, near Angoulême (where the stampers have been replaced by a beater) and Richard de Bas (founded in

1326), near Ambert, where the French Association "La Feuille Blanche" founded a historical paper museum, while keeping the mill in operation; the old stampers are still employed. The installations and manipulations of the vatman, coucher, and layer, as well as the drying and calendering procedures are outlined. No dyes are used for the manufacture of colored paper; instead dyed rags, carefully sorted according to color, are employed for this purpose. 1 table, 27 illustrations, and the text of 3 old papermakers' songs in French with German equivalents, one of them set to music. E.S.

PAPER INDUSTRY. Mando modernizes. Paper Ind. 33, no. 10: 1182-4 (January, 1952); *cf.* B.I.P.C. 22: 344-5.

The modernization program in progress at the different mills of the company is described. 6 illustrations. E.S.

PROVINCIAL PAPER LIMITED, *Thorold, Ont.* Provincial Paper expands Thorold mill. Paper Trade J. 134, no. 1: 12, 14 (Jan. 4, 1952); Can. Pulp Paper Ind. 5, no. 1: 12-13 (January, 1952); Paper Mill News 75, no. 6: 17-18 (Feb. 9, 1952); Paper Ind. 33, no. 11: 1285-6 (February, 1952).

Expansion plans at Provincial Paper include the addition of a 136-inch paper machine which will increase production from 55 to 135 tons, and the subsequent addition of a fourth machine, of 120-inch width, which will ultimately more than triple the current output. A waste-paper pulping plant, Canada's largest, and a complete new laboratory will also be constructed. Additional power for the expanded mill will be provided by a new Foster-Wheeler boiler. 1 illustration. M.W.

PULP & PAPER. Atenquique—5 years later. Pulp & Paper 26, no. 1: 38 (January, 1952); *cf.* B.I.P.C. 18: 691.

A brief reference is made to new installations at the Mexican kraft pulp, paper, and board mill. 4 illustrations. E.S.

PULP & PAPER. Brunswick's increase; how it engineered 400-ton output. Pulp & Paper 26, no. 1: 43-4, 46, 49, 52, 101 (January, 1952).

The expansion program of the Brunswick Pulp & Paper Co. at Brunswick, Ga. is described which increased the daily production of bleached sulfate pulp from southern pines and hardwoods for high-grade papers from 290 to 400 tons. The improvements in all departments are outlined, including four new digesters, an entirely new washroom with brown-stock washers, increased screening capacity, replacements in the last four bleaching stages with larger washers, and revamping of the existing Fourdrinier machine and Kamyr drier, so that their production could be stepped up to an average of 400 tons daily. Additional electrical and steam-generating capacity and water supplies were also provided. 21 illustrations. E.S.

PAPER MANUFACTURE

AREND, A. G. A review of some improved paper pulp processes. Paper Making and Paper Selling 70, no. 3: 37-8 (Autumn, 1951).

Brief reference is made to improved methods for the utilization of hardwoods in the production of paper and board, ion-exchange coating systems, and the use of sodium peroxide for deinking waste printed papers. M.W.

PAPER SPECIALTIES

ANON. Know your papers. Paper & Twine J. 24, no. 11: 7, 14-15; no. 12: 12-13; 25, no. 1: 12-13; no. 2: 12-14; no. 3: 12-13; no. 4: 12, 24-5; no. 5: 7, 26-7; no. 6: 7, 26; no. 7: 7, 29-31 (January-September, 1951); *cf.* B.I.P.C. 21: 334.

The final part of the series of brief descriptions of various types of paper and paperboard is given. These references cover terms from setup boxboard through wrapping manila. M.W.

DAY, FREDERICK T. Labels, label design and labelling. Paper & Print 24, no. 4: 409-12, 414 (Winter, 1951).

The author discusses the varieties of labels which are produced, label design, methods and papers, adhesives, and label treatment. 2 illustrations. M.W.

DAY, FREDERICK T. Paper conversion and usage. No. 22. Papers for seals and brand labelling purposes. World's Paper Trade Rev. 136, no. 25: 1792, 1797 (Dec. 20, 1951); *cf.* B.I.P.C. 22: 347.

The advantages for various purposes of esparto, chromo, coated enamel, and surface and metal papers as the body papers for seals and labels are pointed out, and the properties of heat-seal or heatfix adhesive coatings are mentioned. 2 illustrations. M.W.

MORRIS, CHARLES V. 'You can't go wrong when you team up with Mr. Ingenuity.' Paper & Paper Products 93, no. 8: 6-7, 10 (Jan. 5, 1952); *cf.* B.I.P.C. 22: 348.

In this last article of a series of pointers for paper men, additional examples of substitutions for unavailable or improved printing papers are given. 2 tables. E.S.

NICHOLS PAPER PRODUCTS, *Green Bay, Wis.* Two protective packaging products. Am. Paper Merchant 49, no. 1: 13 (January, 1952); Paper Trade J. 134, no. 3: 12 (Jan. 18, 1952).

Two protective packaging wraps, "Sof-Rap" and "Krepak," are described. The former consists of one sheet of a two-way, flexible, crinkled-cushion paper strip laminated to an equally flexible, tough, crinkled kraft paper in order to allow slippage. Krepak is basically the same in construction but without the kraft exterior sheet. Both wraps offer flexible cushion softness, clothlike foldability, light weight, ease of handling and cutting, insulation, and absorbency. By utilizing several thicknesses of Sof-Rap, a blanket-type cushion can be constructed which complies with JAN-P-100 for flexible cushion wrap. 2 illustrations. M.W.

TUCKER, L. Box cover papers. Paper Market: 146, 148-9 (December, 1951).

Following a brief historical note on the use of fancy papers, the development and production of the following box cover papers are discussed: flint, enamel, satin, leatherette, fancy-printed, metallic, flock, and trade-mark papers. M.W.

WOOD, R. H. Military barrier materials. Tappi 35, no. 1: 128-32A (January, 1952); Am. Paper Converter 26, no. 2: 10-11, 42, 44, 46 (February, 1952).

The author discusses the three groups of military barrier materials in current use (greaseproof, waterproof, and water-vaporproof), the three specifications JAN-B-121, JAN-P-125, and MIL-B-131A which cover them, and tests which are employed for their evaluation. E.S.

PAPER SPECIFICATIONS

CARTER, R. H. Purchasing of paper by the General Electric Co. with stress on specification purchasing and its technical aspects. Tappi 35, no. 1: 113-14A (January, 1952).

Approximately 85% of the purchases of paper and paper products by the General Electric Co. is bought to specification; the general program and the correlation of the specification requirements by the various plants are described. E.S.

JOY, W. H. Consumer buying of commercial papers on specification basis by the Bell System. Tappi 35, no. 1: 114-15A (January, 1952).

The paper standardization program and specification purchasing by the Bell System, as well as the resulting advantages, are discussed. E.S.

KANTROWITZ, MORRIS S. Technical aspects of Government Printing Office paper specifications. Tappi 35, no. 1: 115-17A; discussion: 117A (January, 1952).

The different tests on all deliveries of paper and envelopes for public printing by the Government Printing Office Laboratory for compliance with specifications are outlined. 1 table. E.S.

PAPER SPLICING

MCMULLEN, JOSEPH E. New method of preparing the leading edge of a roll for splicing. Am. Pressman 62, no. 1: 27-8 (December, 1951).

A method is described which reduces the possibility of missing a high-speed paster and saves newsprint by keeping the overlap at the splice or paster joint to a minimum. 3 illustrations. M.W.

PATENTS

WEST, CLARENCE J. United States patents on papermaking, second quarter, 1951. Tappi 35, no. 1: 140-5A (January, 1952); *cf.* B.I.P.C. 22: 35.

A list of U. S. patents on papermaking for the second quarter of 1951 is presented. E.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

CRAMER, GEORGE. Fade-Ometer testing of package inks. Am. Ink Maker 30, no. 1: 30-1, 33, 65 (January, 1952).

A study was made of the various factors involved in ink permanency, including light source, relative humidity, and variations in light intensity. A test has been developed for evaluating and reporting the relative fastness or resistance to fading in sunlight of materials used in packaging. They include not only the inks, but paper, paperboard, lacquers, varnishes, coatings, films,

and other materials. The Fade-Ometer, made by Atlas Electric Devices Co., Chicago, was chosen as the most adaptable piece of equipment for testing permanency. The calibration of the apparatus, the procedure, and the method of reporting results are described. 2 tables. M.W.

PHYSICAL TESTING—INK

STEINBRUNER, JOSEPH. Testing procedures for inks and printing surfaces. Tappi 35, no. 1: 121-3A (January, 1952).

The author describes the tests to which inks are subjected in the Chicago Branch of International Printing Inks, as well as earlier printability tests and their applications which were developed by members of IPI. E.S.

PHYSICAL TESTING—MOISTURE

ANON. Printer's moisture indicator. Am. Pressman 62, no. 1: 32 (December, 1951).

A small portable instrument (sword hygrometer) has been developed which measures the moisture content of the air in the pressroom and of stacked sheets of paper. A sensitive element in the perforated end of a thin, hollow blade, 18 inches long, responds to variations in humidity by slight changes in length which cause an indicator to move across a scale. 1 illustration. M.W.

PHYSICAL TESTING—PAPER—BONDING OF FIBERS

VAN DEN AKKER, J. A. A note on the theory of fiber-fiber bonding in paper; the influence on paper strength of drying by sublimation. Tappi 35, no. 1: 13-15 (January, 1952).

A most important factor influencing the strength of paper is the fiber-to-fiber bonding strength, about which little is known. Although wet pressing creates the environment for fiber-fiber bonding and has a strong bearing on the final sheet strength, pressing alone cannot account for the molecular, or near molecular, contact between fibers required for bonding in the dry sheet. Campbell has advanced a theory that the fibers are drawn together during the drying process by the surface tension and internal tension of water. This article presents work which tests Campbell's theory rather directly, through drying of experimental sheets in such manner that the water is in the ice phase, thus eliminating the influences of surface and internal tensions. The results support Campbell's theory and lead to the formulation of questions for future research. 3 tables and 2 references. E.S.

PHYSICAL TESTING—PAPER—ERASURE TEST

WINK, W. A., BECKMAN, N. J., RANEY, W. P., and VAN DEN AKKER, J. A. Instrumentation studies. LXVII. Erasibility of paper. IV. A proposed method for evaluating the erasing quality of paper. Tappi 35, no. 1: 137-9A (January, 1952); *cf.* B.I.P.C. 22: 194.

The purpose of the present report is to present a procedure for the evaluation of erasibility evolved from the previous studies carried out under this program (*cf.* B.I.P.C. 21: 865-6). Emphasis is placed on three general aspects of the problem: the ease of erasure of inked characters (penciled or typewritten characters are not considered), the appearance of the erased surface and that of the rewritten characters, and the function of the paper. Details of the different procedures involved in the test and of the method of reporting the results are given. 3 references. E.S.

PHYSICAL TESTING—PAPER—STRENGTH

PELLINEN, HEIKKI. The relationship between tensile, tearing, and adhesive strengths of paper. Paper and Timber (Finland) 33, no. 12: 367-81 (December, 1951). [In Finnish; English summary]

Because of its nonuniform construction, the physical strength properties of paper are also heterogeneous or anisotropic. In addition to the α-cellulose component, paper fibers contain varying amounts of hemicelluloses which act as a cement and bind the fibers together. Hemicelluloses can be replaced by sizes added to the paper during the manufacturing process, such as casein and starch; these impart strength properties similar to those resulting from beating or pressing a wet sheet in a hydraulic press. On the other hand, certain sizes, like dextrin and silicates, do not seem to be similar in their action to the hemicellulose cement. The anisotropy of paper can be observed by comparing its tensile strength in two directions: in the plane of the paper and perpendicularly to it; the latter also indicates the approximate value of the adhesive tensile strength (bonding strength). The ratio of the tensile strengths seems to depend upon the dimensions of the fibers. When the adhesive strength increases, the anisotropy of paper decreases. The tearing strength of paper seems to be related to its tensile and bonding strengths. The ratio of tear and tensile strength may indicate how the rupture of paper changes from plastic to elastic rupture when the adhesive strength increases; this occurs when the paper is heavily sized or well beaten. In addition to the tensile stress, bending stresses seem to be present in the tearing process. Bending stresses cannot take place when the bonding strength is low; only when it is sufficiently high will the bending or edge stresses be able to bring about an elastic rupture and a decrease in the tearing force. The tearing test is an interesting material-testing procedure which may indicate the breaking strength of paper under the influence of combined stresses. In addition to fiber length, tearing strength is also influenced by several other factors, such as the stiffness and degree of crimping of fibers. 5 tables, 19 figures, and 17 references. E.S.

PHYSICAL TESTING—PAPER—VAPOR TRANSMISSION

GELBER, PHILIP A., and BOWEN, J. HARTLEY, JR. Flexing-test device. Modern Packaging 25, no. 5: 125-8, 178-9 (January, 1952).

The development of a method for the evaluation of flexible water-vapor-proof barrier material is reported, and the instrument which was employed, the Gelbo flex tester, is described. The transmission-rate tests which were carried out indicate that the tester is quite sensitive to changes in material and that it can be utilized in this manner, as well as for evaluating the critical performance of a material. The test results also indicate that the tester is capable of duplicating to a remarkable degree the service-application damage on the barrier materials. 3 tables and 5 figures. M.W.

PHYSICAL TESTING—PAPER BAGS

MULDOON, T. J., and COUCH, R. DE S. Fatigue test reveals new paper performance data. Am. Paper Converter 51, no. 8: 10-11, 44, 46 (August, 1951); *cf.* B.I.P.C. 21: 338.

Based on the concept of fatigue in paper, a new test instrument was designed by General Foods Corp. to apply repeated impacts on flat and creased sections of paper cut from various paper bags. Metal balls are allowed to

drop on a rigidly held piece of paper. The number of balls required to fracture the paper is used as an indication of the impact-fatigue strength. The size of the balls and the distance of the drop are correlated with the strength of the paper so that the number of impacts which are required to break a sample is between 15 and 20. Indications are that there is a fairly good correlation between this test and the flat sheet and drop test with glassine and kraft paper. The test will pick out large variations in performance, but more data will be necessary to determine its accuracy when measuring small differences. The variables which have to be controlled include the moisture content of the paper, the grain direction of the paper in the test instrument, the size of the balls, and the height of the drop. Although the number of grades of paper that can be evaluated accurately by this test has not been determined as yet, for those grades which have been tested, it appears to predict with fair accuracy the performance which may be expected of a bag made from these grades of paper. 6 figures. M.W.

PHYSICAL TESTING—PULP

BRECHT, WALTER, and KLEMM, KARLHEINZ. A method for the rapid evaluation of the quality of groundwood pulps during operation. Das Papier 6, no. 23/24: 489-503 (December, 1951). [In German]

Reference is made to the urgent need for rapid evaluation methods of groundwood pulps during current manufacture, because the German standards 201 (Evaluation of the quality of groundwood pulps) and 202 (Classification of groundwood pulps) which were developed by Brecht and Holl (*cf.* B.I.P.C. 9: 397) and Brecht and Süttinger (*cf.* B.I.P.C. 15: 273-4), respectively, are too time-consuming and can only be applied to the finished pulps. In nearly all large groundwood mills the mechanical pulps or at least a considerable portion of the output is immediately converted to paper; tests are therefore required which will give an indication of the suitability of a pulp for different use requirements before it reaches the paper machine. A method was developed which requires only one eighth of the time needed for the procedures of the German standard 201. It consists in forming wet pulp sheets upon the Rapid-Köthen sheet machine, determining the initial wet strength according to the method described by Brecht and Heiniger (*cf.* B.I.P.C. 17: 574-5), and deducing data from these values on the drainage behavior of the pulps on the paper-machine wire. The initial wet-strength and drainage-behavior values permit the evaluation of the structural character of the groundwood pulps, so that predictions with regard to their sheet-making behavior and the properties of the finished paper can be made. The different procedures are outlined in considerable detail, and several examples of applications are given, including data on mixed groundwood and chemical pulp furnishes, without and with the addition of fillers. The authors admit that the method still requires refinement and hope to accomplish this on the basis of additional experimental data. 9 tables, 5 figures, and 11 footnotes. E.S.

PHYSICAL TESTING—PULP—SCREEN ANALYSIS

PERILÄ, OLAVI. A study of the classification of cellulose fibers according to their length. Paper and Timber (Finland) 33, no. 12: 382-90 (December, 1951). [In Finnish; English summary]

The first part of the article deals with attempts for improving the efficiency of the Clark classifier (*cf.* B.I.P.C. 9: 416-17) by covering the central portion of the wires with baffles; either plates or cones were used. All

baffles were found to improve the results of the classification, and no differences could be observed between the different baffle types. In the second part of this study preliminary experiments are described which were carried out with an inclined-screen classifier designed by the author; its construction is shown in two illustrations. Two wires are used as in the Clark classifier, so that three fractions result. By selecting suitable screening conditions, comparatively uniform fractions of distinctly different length classes can be obtained. When used for separating fiber fines (less than 0.2 mm. in length), the fiber losses become considerable. However, in the present study aspen sulfite pulp was used, in which the fines amounted to over 7%. The following conclusions can be drawn from the present experiments: The most suitable angle of inclination was found to be 60-65° when the pulp consistency was 0.2% and screens with 25 and 67 wires per inch were used. When the consistency was decreased and narrower meshes were employed, the optimum angle of inclination decreased. The most suitable pulp consistency depends entirely upon the desired results. If a main fraction as free as possible from fiber fines is wanted, a low consistency is best; however, if low pulp losses from this main fraction are desired, higher consistencies should be employed. although it is not recommended to exceed 0.3%. The selection of the screen combination also depends on the required results. If a uniform main fraction is wanted, screens with 25 and 118 wires, respectively, are recommended. If, on the other hand, the second and third fractions are desired to be uniform in fiber length, screens with 40 and 150 wires, respectively, would be suitable. When one of the fractions is wanted as uniform and complete as possible, it must be rescreened, and this treatment may even be repeated a third time, if particularly accurate results are desired. 2 tables, 37 figures, 15 photomicrographs, and 8 references. E.S.

PLASTICS

KLINE, GORDON M. The year 1951 in review. Modern Plastics 29, no. 5: 125-6, 128, 130, 132, 134, 136, 138, 186-96 (January, 1952); *cf.* B.I.P.C. 21: 416.

A literature review of the developments in the plastics industry during 1951 is presented. 7 illustrations and 573 references. M.W.

MODERN PLASTICS. Materials supply and demand. Modern Plastics 29, no. 5: 77-86, 167, 169-70, 172-3 (January, 1952); *cf.* B.I.P.C. 21: 416.

The supply and demand trends during 1951 and predictions concerning availability during 1952 are presented for the following types of plastics: cellulosics, phenolics, polystyrene, urea and melamine, the vinyls, and polyethylene, acrylic, and nylon. 8 tables. M.W.

POWER

MYERS, DAVID MOFFAT. Power supply—hydro, steam, or purchased. Paper Ind. 33, no. 10: 1188 (January, 1952); *cf.* B.I.P.C. 22: 331.

The steam and power cost is an important percentage of the total cost of producing paper. Before the expenditure of any amount of money, the author emphasizes the need for a proper analysis of the whole range of possibilities of power sources to determine the total combined annual cost of steam and power services. E.S.

SRIKANTAN, D. L. Problem of power for pulp and paper mills in India. Indian Pulp and Paper 6, no. 5: 235-6 (November, 1951).

The author suggests that for the paper industry the main source of power should be either a hydroelectric or a thermal plant with a Diesel motor-generator set or a storage-battery team to serve as a standby. With regard to electric motors, he recommends the use of synchronous motors rather than induction types. The possibility of utilizing solar energy is also mentioned. M.W.

PRINTING AND PRINTER'S INK

ANON. Paper for printing. Am. Pressman 62, no. 2: 22, 24 (January, 1952).

To illustrate the need for co-operation between the customer, the designer, the papermaker, and the printer in planning a printing job, an incident is described in which a poor job of printing resulted because neither the design nor the type of stock was suitable for the type of printing that was required. M.W.

COATES BROS. INKS LTD. How printing inks dry. Brit. Printer 64, no. 382: 42-4 (January-February, 1952).

Following a discussion of the three fundamental types of ink drying, chemical action, evaporation, and absorption, the following improved methods of drying are described: quick-setting, heat-drying, precipitation, polymerization, cold-setting, and electrical methods. 1 illustration. M.W.

NEUBERT, ROBERT A. Printing inks makes millions think. Am. Pressman 62, no. 1: 60, 62, 64, 66 (December, 1951).

The development of the art of inkmaking to the complex science of which it consists today is sketched, and the various factors which must be considered in ordering and formulating inks for different applications are discussed. 1 illustration. M.W.

WILLIAMS, A. E. Luminous inks. Paper & Print 24, no. 4: 428-9 (Winter, 1951).

The preparation of luminous poster ink from zinc sulfide and of fluorescent inks from synthetic resins and fluorescent dyestuffs is described. Maximum fluorescence is exhibited in very dilute solutions, although dyes of high molecular weight can be used in stronger concentrations than those with low molecular weight. The fluorescent-dyestuffs type of luminous inks are gradually destroyed by exposure to daylight. Reference is also made to other luminescent materials—e.g., the tungstates of thallium, cerium, and magnesium, manganese-activated zinc silicate, and uranium salts which can be applied to posters. M.W.

PRODUCTIVITY

POLLOCK, D. S. Productivity. Paper Box Bag Maker: 4-5 (July, 1951); Paper-Maker (London) 122, Annual no.: 62-3 (1951).

All reports of the different productivity teams which visited the United States endorse to varying degrees the American attitude and recommend the adoption of the methods operating in the United States. However, there are considerable grounds for fear that little or no progress has or will be made in Great Britain. The author considers the factors which determine the pace

of progress in British industries and attempts to ascertain the means by which the acceptance of the American lessons can be accelerated. In his opinion, the essential initial requirement for progress depends upon the creation of a spirit of mutual trust and collaboration between employees and management. Although some progress has been made in this direction, much more could be done to foster good will between the two sections of the industry. E.S.

RAW MATERIALS

HUNT, L. G., and PHELPS, J. M. Paper pulp. Paper Making and Paper Selling 70, no. 3: 41-3 (Autumn, 1951).

The investigations of the Colonial Development Corporation into new sources of papermaking fibers are summarized. Various areas of South Africa were investigated, and it was found that production costs would be prohibitive at present for utilizing elephant grass in Uganda, eucalyptus in the Lake Victoria region, or the conifers of Kenya. A large area in Swaziland, the Usutu Forests, is being reforested with pines, however, and should be productive in a few years. 4 illustrations. M.W.

RAYON

KARNIK, M. G. Rayon research in India. Indian Pulp and Paper 6, no. 4: 189-90, 205 (October, 1951).

The author outlines a research program for determining the suitability of cellulose raw materials which are indigenous to India for the manufacture of rayon-grade pulp. M.W.

RESEARCH

AKERS, WALLACE. Rate of expenditure on and evaluation of the results of industrial research. Ind. Chemist 28, no. 324: 11-12 (January, 1952).

The possibility of establishing a definite measure for determining the amount of money which a company should spend for research and development is discussed. Research expenditure may be expressed as the annual expenditure per qualified member of the research department or as a percentage of the annual turnover of the company. In the chemical industry, large firms seem to spend about 3% of their turnover for research purposes. The top limit of legitimate expenditure could be set at that sum which, on the average, produces as many successful inventions as the company is in a position to exploit. Various factors must be considered in the evaluation of research. One method would be to consider a certain percentage of the return on the capital invested in a new process as the benefit which the company obtains by reason of its maintenance of a research department. M.W.

BRYDE, ØYVIND. The adoption of the teamwork idea in technical research. Norsk Skogind. 5, no. 11: 360-7 (November, 1951). [In Norwegian; English summary]

The author discusses the problems involved in the adoption of the teamwork idea, as well as the advantages resulting from it, with reference to an actual case where the timing of the work of the various participants was followed graphically. Examples of the wood-conversion industry, including the chemistry of high polymers, are listed to illustrate the applicability of the principle to problems of the rayon and pulp and paper industries. Although teamwork may seem less suitable for smaller institutions because it

apparently requires an extension of the staff, the more universal applicability of modern methods may balance the increasing demand for specialists. 11 figures and 9 footnotes. E.S.

[RIDDELL, G. L.] British printing research. Brit. Printer 64, no. 382: 48-51 (January-February, 1952); Paper Market: 154d, 156, 158 (December, 1951); Am. Ink Maker 30, no. 1: 29, 65, 67 (January, 1952).

Sections from the annual report of the Director of Research of PATRA are summarized. The first reference is concerned with the achievements which were made during 1951 in the fields of letterpress printing, photomechanical processes, lithographic studies, printing inks, paper, stereotyping and electrotyping, and bookbinding. The second reference covers most of these topics in somewhat less detail, and the third reference deals exclusively with the section on printing inks. M.W.

[RIDDELL, G. L.] PATRA's study of packaging problems. Paper Box Bag Maker: 228-9 (December, 1951); Brit. Packer 13, no. 12: 34, 39 (December, 1951); World's Paper Trade Rev. 137, no. 3: 180, 185 (Jan. 17, 1952).

The information on packaging which was presented in the annual report of the Director of Research of PATRA is summarized. Reference is made to research on the strength of containers, moistureproofness of packages, transmission of light by wrapping materials, and effectiveness of mold inhibitors and insecticides. M.W.

RESEARCH LABORATORIES

B. S. CENTRALLABORATORIUM AB, *Helsingfors.* Svensk Pappersstidn. 54, no. 23: 823-4 (Dec. 15, 1951); Finnish Paper and Timber 2, no. 10: 113-14 (December, 1951). [In Swedish and English]

The Central Laboratory of the Finnish Industries was 35 years old on November 1, 1951; its major activities concern the different branches of wood conversion. Its organization, recent expansions, and publications are mentioned briefly; Bertil Nybergh is the present executive director. 1 and 4 illustrations, respectively. E.S.

RUBBER

LEIN, CHARLES. Characteristics of "Pliofilm." Brit. Packer 13, no. 12: 30-2 (December, 1951).

The properties and characteristics of Pliofilm, including its printability and behavior under heat, are described. 4 tables and 4 illustrations. M.W.

SAFETY

MCELROY, FRANK S., and MCCORMACK, GEORGE R. Paperboard-container-industry work-injury rates, 1938-50. Monthly Labor Rev. 73, no. 6: 675-80 (December, 1951).

The injury-frequency rate in the paperboard container industry for 1950 averaged 17.9 disabling work injuries for each million employee-hours worked. This represents an increase of 6% above 1949 and was somewhat less favorable than the average for all manufacturing. The actual time lost during 1950 is estimated at 71,500 man-days of work. The estimated indirect cost of the industry's injury-producing accidents in 1950 amounted to $8 million, and the total cost, including medical expenses, exceeded $12 million.

Of the four major groups of plants in the industry, corrugated and fiber box plants had the highest and set-up box plants the lowest average injury-frequency rates. With regard to plant size, the highest average frequency rate occurred in plants which employed 100-249 workers. 2 tables and 1 figure. M.W.

MATTAIR, R. Sodium chlorate . . . how to handle it safely. Paper Ind. 33, no. 10: 1187-8 (January, 1952).

The properties and hazards of sodium chlorate are discussed, and precautions in handling and storage are outlined; the corrosion problem is also considered. 1 table and 2 references. E.S.

O'CONNELL, F. The role of the plant nurse in the safety program. Pulp Paper Mag. Can. 52, no. 13: 174, 176 (December, 1951).

An industrial nurse is in the best position to promote fundamental safety education, because she has the greatest opportunity to emphasize the importance of individualistic safety. She often has a closer, more informal contact with workers and can learn to recognize conditions which may lead to accidents. By co-operating with the safety director she can help to develop a safe industrial atmosphere. M.W.

SEMI-CHEMICAL PULPING PROCESS

HERBST, J. H. E., and MARSHALL, H. B. Preparation and properties of bleached neutral sulphite semichemical pulp from white birch. Pulp Paper Mag. Can. 52, no. 13: 106-9 (December, 1951); *cf.* B.I.P.C. 21: 232-3.

White birch chips were cooked with neutral sulfite semichemical cooking liquor of various concentrations for various periods. The resulting pulps were analyzed and then bleached by a three-stage process. The chemical and physical properties of the bleached pulps were determined, and the results are presented in tables and graphs. An attempt was made to correlate the properties with the history of the pulp. 6 tables, 3 figures, and 4 references. E.S.

SETUP BOXES

FRA. Calculations for cardboard boxes. (XII). Allg. Papier-Rundschau no. 23: 985-7 (Dec. 12, 1951). [In German] *cf.* B.I.P.C. 22: 357.

A sample calculation is given of the cost (in Germany) of a covered upright soap box with slip-on lid. 2 tables and 1 illustration. E.S.

SHIPPING CONTAINERS

ANON. Facts of the case. Bowater Papers no. 2: 12-16 (1951).

In order to illustrate the versatility, strength, and flexibility of corrugated containers, the development of packaging methods for large cathode-ray tubes is outlined. The container now in use consists of a corrugated case fitted with kraft liner cushion springs. The case is collapsible, is easily stacked, and protects contents from shocks delivered from any angle. 4 illustrations. M.W.

BAILEY ENGINEERING COMPANY, *Ramsey, N.J.* Insulated shipper. Modern Packaging 25, no. 5: 95 (January, 1952); Am. Boxmaker 41, no. 1: 38-9 (January, 1952).

Foamed phenolic resin is now being employed as the insulating material in containers used for highly temperature-sensitive whole blood. The foamed resin is a spongy, low-density material, exceptionally light in weight, with a very low thermal conductivity rate. A double-walled corrugated container which is lined with 3-inch slabs of the foamed resin maintains safe temperatures for 24 hours without re-icing. 2 illustrations. M.W.

SHIPPING CONTAINERS—FIBER DRUMS

PACIFIC STEELFIBER DRUMS, INC., *Alhambra, Calif.* Successful foil-kraft drum. Modern Packaging 25, no. 5: 105-7 (January, 1952).

The development of a single-use fiber drum container for oil and grease products is reported. The walls of the drum consist of a kraft linerboard-aluminum foil laminate which is wound convolutely to give six or more plies of foil. The ends of the drum are constructed of sheet steel. Successful operation is reported for the drum under the same service conditions given steel drums, and in addition to the savings of critical steel which they afford, the drums also provide a cost and weight savings. Because of the water-vapor resistance provided by the use of several layers of foil, they are also being considered for handling granular or powdered products which must be kept dry. 5 illustrations. M.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

UNION BAG & PAPER CORPORATION. Lined paper bags for toxic chemicals. Chem. Eng. 59, no. 1: 186 (January, 1952).

A specially constructed paper bag has been developed to package toxic chemicals. It is of duplex construction and has an inner liner of Unithene, a polyethylene-coated kraft paper which offers adequate resistance to the contents as well as to the penetration of outside moisture. 1 illustration. M.W.

UNION BAG & PAPER CORPORATION. Railroads approve paper bags as grapefruit carriers. Packaging Parade 20, no. 228: 82, 84 (January, 1952); Southern Pulp Paper Manuf. 15, no. 1: 86 (January, 1952); Food Eng. 24, no. 2: 162 (February, 1952).

The railroads have authorized the use of a specially developed paper bag for the shipment of grapefruit. It is made from three layers of wet-strength paper and is suitably perforated to permit ventilation of the contents. Test shipments show that this type of container provides protection comparable to that provided by conventional types, and its use results in substantial savings in container costs. 4 illustrations. M.W.

SHIPPING CONTAINERS—TESTING

LONG, W. D. Air Force packaging development. Fibre Containers 37, no. 1: 40, 42, 47 (January, 1952).

Reference is made to the different pieces of testing equipment installed in the packaging laboratory of the Wright Air Development Center at Dayton, Ohio, and to the activities of its Packaging Branch; the latter include research and development phases of packaging materials, techniques of application and the design of containers, together with the necessary cushioning,

blocking, and bracing, and the development of specifications for procurement purposes. 6 illustrations. E.S.

ZUSI, CHARLES J. Evaluating case fatigue. Modern Packaging 25, no. 5: 129-30 (January, 1952).

A study of reasons for failure of fiber containers as a result of fatigue is reported. Because several variables were involved, only tentative conclusions can be drawn, but the tests indicate that the shape of the box, within normal limits, is not an influential factor, although the efficiency with which the boxes were fabricated is important. The relative humidity of the storage atmosphere was the most influential factor, and any atmosphere greater than 50% R.H. accelerated the effects of fatigue. 4 figures. M.W.

SISAL

GONDHALEKAR, G. H. Manufacturing of wrapping paper from sisal fibre waste as a cottage industry. Indian Pulp and Paper 6, no. 5: 237-40 (November, 1951).

The utilization of the pulp waste from sisal fibers for the manufacture of low-grade wrapping papers is proposed. Indications are that, as a home-unit operation, it would be an economically sound venture, and that there would be a ready market for the product. 2 tables and 4 references. M.W.

SPECTROSCOPY

ROSENBAUM, E. J. Ultraviolet absorption spectroscopy. Anal. Chem. 24, no. 1: 14-16 (January, 1952).

References to the study of lignins and related substances are included in this literature review on all aspects of the analytical applications of ultraviolet absorption spectroscopy which were reported in 1951. 61 references. M.W.

SPECTROSCOPY, INFRARED

GORE, ROBERT C. Infrared spectroscopy. Anal. Chem. 24, no. 1: 8-13 (January, 1952); *cf.* B.I.P.C. 21: 422.

The literature which appeared during 1951 in the field of infrared spectroscopy is reviewed. Various polymers have been studied including oxidized cellulose. 419 references. M.W.

STARCH

BOURNE, E. J. Some recent developments in the academic fields of starch chemistry. Chemistry & Industry no. 48: 1047-52 (Dec. 1, 1951).

A review is presented of the progress in starch chemistry which has been made, for the most part, during the last decade. 5 figures and 162 references. M.W.

HELLMAN, N. N., BOESCH, T. F., and MELVIN, E. H. Starch granule swelling in water vapor sorption. J. Am. Chem. Soc. 74, no. 2: 348-50 (Jan. 20, 1952).

Microscopic measurements are reported of the swelling of individual starch granules of corn, potato, tapioca, and waxy cornstarch, which occur with the sorption of water vapor at various relative pressures. The linear granule

swelling in a water-saturated atmosphere over the vacuum-dry dimension is as follows: corn, 9.1%; potato, 12.7%; tapioca, 28.4%; and waxy corn, 22.7%. For all except tapioca starch, there is practically no hysteresis in the function of swelling *vs.* relative humidity of the atmosphere with which the starch is equilibrated. For all starches, the function of swelling *vs.* moisture content shows an absorption-desorption loop, with the desorption leg giving smaller granule dimensions for equal water content. 2 tables, 1 figure, and 5 footnotes. E.S.

PEARL, WESLEY L. The sorption and rate of sorption of the amylose fraction of starch by papermaking fibers. Tappi 35, no. 1:41-8 (January, 1952).

The amount of amylose sorbed by papermaking fibers under varying conditions has been determined. The change in the concentration of the amylose in the solution was measured by an iodine-photocolorimetric method and an anthrone-sulfuric acid reagent method. The rate of amylose sorption by cellulose fibers was initially high, but fell off and approached zero with the sorption continuing to zero concentration without evidence of reaching an equilibrium. When the amylose concentration level was maintained, the rate of sorption decreased rapidly at first and then appeared to approach a constant value. The rate increased with a decrease in temperature. Once sorbed, the amylose apparently was not removed by a change in concentration and only partially removed by an increase in temperature. The mechanism of sorption was explained as a dual process, in which the amylose was sorbed by the cellulose surface and additional amylose sorbed by the sorbed amylose. At a high solution pH, the rate of sorption was definitely retarded as compared with a low-pH solution. There was a small increase in the rate of sorption with a decrease in the temperature at the high pH but of less magnitude than the increase obtained under more acid conditions. The rate of sorption for cotton linters and alpha pulps increased with the degree of beating of the pulp. The sorption of the amylopectin fraction of starch by cotton linters was established. The bursting strength was observed to increase with the amount of amylose sorbed. 7 tables, 5 figures, and 30 references. E.S.

SAMEC, M. Starch research in retrospect and prospect. Kolloid-Z. 124, no. 3: 135-41 (December, 1951). [In German]

A general review of the advances in starch chemistry which have occurred in the last forty years is presented under the following headings: phosphorus in starch, starches of various plants, nitrogen in starch, iodine-colorimetric differentiation of starch substances, differences in organic constituents, structural differences in the amylopectins of various starches, synthesis of starch, and future problems. 6 figures. M.W.

SINK, W. G., and WORTH, D. L. The perchloric-acid method for the determination of starch and some practical applications. Am. Dyestuff Reptr. 40, no. 26: P848-50, P866 (Dec. 24, 1951).

A modification of McEwen's colorimetric method for the determination of starch in fabrics is presented and discussed. The procedure which is described differs from the original method in three respects: the sample is neutralized after it is dissolved in perchloric acid, and the determination may be stopped at this point and resumed later; twice as much potassium iodate is added for the development of the iodine color; and, since the solution is filtered after neutralization, a blank colorimeter reading on a turbid sample is unnecessary. The presence of urea-formaldehyde resins or fats does not interfere with the determination, but in this method the percentage of locust-bean gum

present is given as well as the percentage of converted starch. The application of the method in the evaluation of optimum temperatures and pH values of enzymes used in desizing is also described. 1 table, 6 figures, and 1 reference. M.W.

STATISTICAL METHODS

HADER, R. J., and YOUDEN, W. J. Experimental statistics. Anal. Chem. 24, no. 1: 120-4 (January, 1952).

A review of the literature of 1951 on the use of statistical techniques for handling experimental data is presented. 154 references. M.W.

HOFFMAN, E. R. The statistical calculation of bursting strength. Tappi 35, no. 1: 4-6 (January, 1952).

With the advent of statistical quality control to a paper mill, the preparation and maintenance of many control charts for the properties of the grades manufactured become a problem. One chart may be used for each property when data are transposed to hypothetical values based on a standard grade of paper. The method is illustrated by Mullen data and consists of graphically establishing the relation of bursting strength to the weight of the paper and the various constituents of the furnish. The data are then adjusted mathematically to the values which would have been obtained if the paper machine had been manufacturing one grade and weight of paper. The resultant chart may then be used for the study of paper-machine performance or pulp reactions to a standardized beating procedure. 9 figures. E.S.

STORAGE BATTERIES

VAUGHAN, J. E. Industrial truck battery requirements. Paper Trade J. 134, no. 1: 23 (Jan. 4, 1952); Paper Ind. 33, no. 10: 1186 (January, 1952).

A method is presented for the calculation of industrial truck battery capacities. 1 figure. M.W.

STRAINS AND STRESSES

HASTEWELL, L. J., and RITSON, F. J. U. A servo-mechanical apparatus for the investigation of the properties of visco-elastic materials. J. Sci. Instruments 29, no. 1: 20-3 (January, 1952).

An apparatus is described which is suitable for the investigation of the mechanical properties of gels and sols which have relaxation times of upwards of one second. The material under test occupies the space between two concentric cylinders and is subjected to constant stress by means of a servo-mechanism designed to follow smoothly at slow angular speeds. The apparatus is calibrated with a Newtonian liquid of known viscosity so that the absolute values of the parameters which specify the mechanical model of the viscoelastic material can be obtained from the continuous record of the strain variation under constant stress. The determination of the constants of the spring-dashpot model to represent the properties of an aqueous solution of gum tragacanth is given as an example of the use of the apparatus. 5 figures and 4 references. E.S.

STREAM POLLUTION

ANON. Wisconsin mills lead in sulphite pollution research. Paper Ind. 33, no. 10: 1162, 1164, 1167 (January, 1952); *cf.* B.I.P.C. 22: 360.

The different research projects of the Sulphite Pulp Manufacturers' Research League in Wisconsin mills, U. S. Health Service acts, and legislation for controlling water pollution in other states are reviewed briefly. E.S.

BAIGAS, JOSEPH F., JR. The New York State pollution control law of 1949 in action. Tappi 35, no. 1: 118-20A; discussion: 120A (January, 1952).

The classification of waters and the adoption of standards of quality thereof covered by the new law are discussed; the New York section of the National Council for Stream Improvement is also conducting water quality surveys in the drainage areas of particular interest to the industry. E.S.

DOUDOROFF, PETER. Biological observations and toxicity bioassays in the control of industrial waste disposal. Proc. 6th Ind. Waste Conf.; Purdue Univ., Eng. Bull., Extension Ser. no. 76: 88-104 (November, 1951).

Biological studies of industrial pollution of water should be directed primarily toward reliable estimation and understanding of the effects of pollutants on aquatic resources of economic and recreational import. Industrial waste disposal should be controlled so as to avoid any direct or indirect damage to these resources. These objectives often cannot be achieved through physical and chemical examination of wastes and receiving waters and through studies of those aquatic organisms which are of no immediate value to man, and which are considered only as indicators of stream conditions. A direct approach to the evaluation of fish habitats and their productivity and to the toxicity of wastes is recommended; comparative studies of fish populations and fishing success in comparable polluted and unpolluted waters are most pertinent. Studies of the bottom fauna (benthos) and of plankton can also be very instructive, but the relative importance of these various organisms as food for perishable fish species should be a major consideration in the conduct of such studies. Toxicity bioassays of industrial wastes help to explain and to predict the effects of industrial pollution and of the remedial measures. 20 references. E.S.

GREAT BRITAIN. *Department of Scientific and Industrial Research. Water Pollution Research Board.* Industrial waste waters; manufacture of paper. Water Pollution Research, 1950: 26-8 (1951).

Pilot-plant experiments were carried out on a mixture of waste waters from a paper mill in the proportions in which they were produced. These studies showed that, when waste waters which contained a relatively low concentration of organic matter were dechlorinated with ferrous sulfate and aerated, no difficulty in the separation of the oxidized iron was encountered. No evidence of interference with the operation of a percolating filter by salts of iron was found. Experiments were also made on the effect on a percolating filter of residual chlorine in diluted and chlorinated black liquor. It was found that concentrations of combined residual chlorine up to an average of 12.6 p.p.m., as determined by the *p*-aminodimethylaniline test, interfered to some extent with the operation of the filter, but did not appear to sterilize the biological film. 2 tables. M.W.

HORLOCK, A. B., ISABELL, R. D., and JOBIN, R. S. The treatment of pulp and paper mill effluents. Paper-Maker (London) 122, no. 6: 404, 406-13, 421 (December, 1951).

This is a general discussion of the problem of stream pollution by the pulp and paper industry in Great Britain. The first step in the treatment of pulp and paper mill effluents is to make a thorough survey of all mill processes and apply corrective measures at the source. Particular attention should be paid to the white-water system in paper mills and to the removal of black liquor from digesters in pulp mills. The problem of effluent treatment from paper mills which employ imported wood pulp as the main component of their paper furnish is largely one of suspended-solids removal; the advantages of mechanically desludged settling tanks are discussed in this connection. Pulp mills and mills employing considerable amounts of low-grade waste paper have to deal with the added problem of B.O.D. reduction. The investigation of the treatment of esparto-pulp washing effluents on large-scale percolating filters and the treatment of dilute esparto and straw black liquors on laboratory-scale percolating filters have indicated that the method is an effective one for reducing B.O.D. The treatment of pulp-mill effluents on high-rate percolating filters may prove to be a reasonably practicable method of disposal. Reference is made to the Public Health (Drainage of Trade Premises) Act, 1937, in connection with the discharge of trade effluents to public sewers, and to the provisions of the Rivers (Prevention of Pollution) Act, 1951, with respect to the prevention of stream pollution. 1 table and 11 references. E.S.

SULFITE PROCESS—MAGNESIUM BASE

WILCOXSON, L. S. Development of the magnesia-base pulping process. Proc. 6th Ind. Waste Conf.; Purdue Univ., Eng. Bull., Extension Ser. no. 76: 51-6 (November, 1951); *cf.* B.I.P.C. 22: 283.

An industrial waste problem occurs with calcium bisulfite pulping which is based on the factors of loss of chemicals, loss of potential fuel value of lignins and other dissolved solids, and stream pollution. An investigation of this problem showed that with a magnesium-base liquor a cyclic process was possible which permitted a substantial chemical recovery. This process was developed and put into operation at the Longview, Wash. mill of The Weyerhaeuser Timber Co. It has been found to provide an effective conservation of chemical values and to result in a virtual elimination of the stream-pollution problem. 1 flow diagram and 7 references. M.W.

SULFITE WASTE LIQUOR

ANON. Waste product or potential wealth? Bowater Papers no. 2: 6-11 (1951).

The various means which have been developed for the utilization of spent sulfite liquor are summarized. 4 illustrations. M.W.

SCHOLANDER, AXEL. Ash and flue gases from burning sulphite waste liquor. Tappi 35, no. 1: 1-4 (January, 1952); *cf.* B.I.P.C. 20: 668-9.

This is a complete translation of the Swedish article. E.S.

SULFITE WASTE LIQUOR—BIBLIOGRAPHY

MARSHALL, H. BORDEN, and JOHNSON, A. MARGARET. Utilization of sulphite waste liquor; a bibliography of the literature from July, 1943 to December, 1950. Tappi 35, no. 1: 146-80A (January, 1952).

An annotated bibliography arranged chronologically under 17 subdivisions is presented; it combines the references listed in Report No. 4-4-50 by the same authors, published by the Research Council of Ontario (June, 1950) and the bibliography by Marshall covering the year 1950 (*cf.* B.I.P.C. 21: 585). E.S.

SULFUR

CHEMICAL ENGINEERING. Sulphur. Chem. Eng. 59, no. 1: 165-76 (January, 1952).

A report on the current sulfur situation is presented which includes an analysis of the present sulfur sources, a summary of new capacity to be added during 1951-1953, and descriptions of processes which can be used to obtain sulfur from sour gases, pyrites, natural gas, petroleum, smelter gases, low-grade sulfur, calcium sulfate, and coal. The present shortage should be alleviated in 1953 when the effectiveness of recent corrective measurements will be felt. The low cost of Gulf Coast sulfur, however, does not encourage the development of alternate, more expensive sources, and Frasch-process sulfur will probably continue to be the chief source until the supply is more nearly depleted. 7 tables, 4 figures, and 16 references. M.W.

MEHL, HEINZ-GÜNTHER. The sulfur crisis. Chem.-Ztg. 76, no. 1/2: 9-12 (Jan. 10, 1952). [In German; English, French, and Italian summaries]

The development of the world's consumption of sulfur in the first half of this century and the present known supplies of sulfur are discussed. The possibilities and measures for overcoming the immediate crisis in the supply of sulfur are considered, and some conclusions are presented with regard to anticipated further developments. 9 footnotes. M.W.

PIGFORD, ROBERT L. Absorption and humidification. Ind. Eng. Chem. 44, no. 1: 25-30 (January, 1952).

A review is presented of papers published during the last year on industrial gas absorption which include several references to industrial sulfur recovery processes. 97 references. M.W.

THOMSON, A. G. Conservation of sulphur. World's Paper Trade Rev. 136, no. 25: 1800, 1802 (Dec. 20, 1951).

The most promising solution to the sulfur shortage in England is to be found in the utilization of imported pyrites and in the use of indigenous resources, especially anhydrite, a form of calcium sulfate. Other long-term possibilities include the recovery of sulfur from flue gas, coke-oven gas, and coal pyrites, and the conservation of the sulfuric acid used in the fertilizer industry. M.W.

SURFACE PHENOMENA

HARRIS, B. L. Adsorption. Ind. Eng. Chem. 44, no. 1: 30-8 (January, 1952); *cf.* B.I.P.C. 21: 427.

The contributions made during the past year to the field of industrial applications of adsorption are reviewed. Sections on surface-area studies and chromatography are included. 1 illustration and 344 references. M.W.

TAILINGS

CHESLEY, K. G., GILMONT, P. L., and PARNELL, J. E. Repulping kraft rejects. Tappi 35, no. 1: 38-40 (January, 1952).

Experimental studies on repulping kraft rejects, both alone and mixed with chips, show that both the knotter rejects and the screen rejects can be repulped with chips without excessive degradation of fiber or loss in yield. The flow sheet of the Crossett paper-mill repulping system is described. 1 table and 6 figures. E.S.

NOMURA, J., and OKADA, S. Cooking of screenings by neutral sodium sulfite process. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 7: 572-80, 628-9 (December, 1951). [In Japanese; English summary]

In the cooking of bonedry red pine screenings by the neutral sodium sulfite process, it was found that about 24% of added chemical was required for a four-hour cook at 170°C. 8 tables, 6 figures, and 7 references. E.G.S.

TENSION WOOD

JAYME, GEORG, HARDERS-STEINHÄUSER, MARIANNE, and MOHRBERG, WILHELM. The influence of the percentage of tension wood upon the technological and chemical suitability of poplarwoods. Das Papier 5, no. 19/20: 411-17; no. 21/22: 445-7; no. 23/24: 504-7 (October-December, 1951). [In German] *cf.* B.I.P.C. 20: 747-8; 22: 55.

The percentage of tension wood (I) in certain poplar species may reach almost 40% (referred to the entire trunk); the effect of this reaction wood upon the morphological, technical, and chemical behavior of poplarwood has therefore not only theoretical but also great practical interest. It has not yet been definitely established whether the tendency for (I) formation is characteristic for certain species, because only an insufficient number of samples have been tested to date; however, it has been found that (I) always develops on the exposed side of the trunk and seems to result to a large extent from wind pressure. When peeling poplars in veneer manufacture the presence of (I) causes a roughened, "wooly" surface, as compared with the smooth surface of the normal poplarwood (II). Pulps prepared from (I) and (II) did not show any difference in fiber length. The specific gravity of (I) is nearly always higher than that of (II); the variations in the specific gravity of (I) of nine different poplar species are presented in tabular form. The subsequent investigation of different poplars (which had previously been chemically analyzed; *cf.* B.I.P.C. 20: 266) showed in several cases that the observed variations in cellulose content resulted from the varying percentages of (I). A comparison of these percentages and the yield of sulfate pulps obtained from these samples under standardized cooking conditions showed that the yield increased with increasing (I); for percentages of 22, 54, 57, and 71% of (I), the yields increased 2.91, 12.38, 15.76, and 20.55%, respectively. The highest pulp yield (65.11%) observed by the authors to date was found for a sample of *Populus trichocarpa* with 71% (I). The chemical and physical investigations of pulps prepared from (I) and (II) gave an approximately 14% higher α-cellulose content, a considerably lower furfural value, a lower lignin content, and a higher whiteness for (I); on beating, the (I) pulps yielded sheets of lower volumetric weight than those from (II); they also exhibited lower strength properties, particularly folding endurance. Under cooking conditions which yield suitable pulps from (II), (I) becomes overcooked, because the thick tertiary layer of its sclerenchyma cells is not protected by lignin. The hemicellulose content of (I) pulps is much lower than that needed for maximum strength development. These observations show that all studies of poplarwood, whether physical or chemical in

nature, must take the presence or absence of (I) into account to yield useful, reliable data. This applies particularly when quality evaluations of individual poplar species are based on the study of only a few samples. The presence of a high, random (I) percentage can lead to entirely incorrect conclusions. 16 tables, 6 figures, and 18 footnotes. E.S.

TEXTILE INDUSTRY AND FABRICS

SASSI, DANIEL. Keeping tabs on textile fibers. Interchem. Rev. 10, no. 1-3: 3-20 (Spring-Autumn, 1951).

The author discusses the relative merits of natural and synthetic fibers with regard to textile and dyeing properties, describes the production processes and uses of the various synthetic fibers, and summarizes the published plans for increased domestic fiber production. 1 table, 11 figures, and 24 references. M.W.

TEXTILE OR'GANON. Base book of textile statistics. Textile Or'ganon [previously called Rayon Or'ganon] 23, no. 1: entire issue (January, 1952); *cf.* B.I.P.C. 21: 489.

This issue is a revision and enlargement of the February, 1946 number of Rayon Or'ganon and consists almost entirely of historic, tabular, statistical material on the textile industry through 1950; it includes several revisions of previously published data. The recent promulgation of the Federal Trade Commission of its new rules on the rayon and acetate industry is included, according to which rayon refers to regenerated cellulose fibers (viscose or cupra) exclusively, whereas acetate is no longer considered a rayon. Numerous tables. E.S.

WASTE

FARBER, EDUARD. Condensation and hydration reactions with low-grade cellulosic materials. Tappi 35, no. 1: 126-8A (January, 1952).

Auto- and heterocondensation reactions as well as topochemical and molecular hydration reactions of cellulosic materials are discussed to show the variety of possibilities they offer for the chemical utilization of low-grade by-products obtained from trees and agricultural crops. 30 references. E.S.

WATER AND WATER TREATMENT

ANON. Abitibi's Thunder Bay mill installs new water system. Paper Ind. 33, no. 10: 1178-9 (January, 1952).

An illustrated description of the construction work on the company's own water system is given. The plant was finished in February, 1951, and the performance of the installations proved satisfactory. 2 diagrams and 6 illustrations. E.S.

WET STRENGTH

NAKABA, Y., MURAO, Y., OYAMA, S., and HASUI, A. Manufacture of wet-strength paper. Part 1. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 7: 553-63, 626-7 (December, 1951). [In Japanese; English summary]

In the formation of a wet-strength paper from sulfite, kraft, and mitsumata (*Edgeworthia papyrifera* Sieb.) pulps, it was found that the most

satisfactory result was obtained with a 10% aqueous solution of trimethylolmelamine which had been aged in 1 *N* phosphoric acid. The finished sheet had a wet strength which was 38% of its dry strength. 12 tables, 4 figures, and 14 references. E.G.S.

ROHM & HAAS COMPANY. *Resinous Products Division.* Notes describe resin use in waterproof starch pastes. Am. Boxmaker 41, no. 1: 27-30 (January, 1952).

Formulations and production techniques for weatherproof pastes based on starch and Uformite wet-strength resins are suggested. Specific recommendations are given for corrugating, solid fiber, and bag pasting. M.W.

ROHM & HAAS COMPANY. *Resinous Products Division.* Wet strength paper for military maps. Rohm & Haas Reptr. 9, no. 4: 19-23 (August-September, 1951); *cf.* B.I.P.C. 22: 362.

Following a summary of the properties and characteristics of wet-strength paper, the papermaking process used by Hawthorne to produce map paper is described. Uformite 700 is the wet-strength resin which is employed; it can be used in low concentrations, is easy to handle, and provides rapid wet-strength development. The resin is added to the furnish as it passes from the jordan to the machine chest. 6 illustrations. M.W.

WHITE WATER

WADLEIGH, D. R., and SIMONS, L. G. Waste water disposal program, Scott Paper Co., Chester, Pa. Tappi 35, no. 1: 16-21 (January, 1952); *cf.* B.I.P.C. 22: 210.

Events leading up to the installation of a waste-water disposal plant at the Chester, Pa., plant of Scott Paper Co. are covered to show how the present plant was determined. Preliminary to filing plans with the state authorities for a complete treatment plant for waste waters discharged into the Delaware River, Scott Paper Co. conducted tests on a standard, full-size, precoat-type filter to obtain sufficient data for the design of a waste-water disposal plant. Tests showed, for example, that the capacity of a Waco filter operating at top speed on paper-machine white water having a fiber content of 8 lb./1000 gal. was 600 g.p.m., but the capacity increased to 1400 g.p.m. when operating on lean waste water at 1.5 lb./1000 gal. Using the test results as a guide, a complete waste-water disposal plant was designed and built using Waco filters, and including a novel water collection system. The plant operation is completely automatic with a recovery of over 90% of the incoming fiber. The collection system consists of an elevated open flume which receives white water from numerous pipe lines fed by individual pumps. The flume conveys the water to a 100,000-gallon collector tank which serves to even out surges. The paper machine furnish is used for precoat and, together with the recovered fiber, is returned for re-utilization in the papermaking process. Actual operating records during the first six months show that filter performance has lived up to predictions based upon pilot-plant studies. 2 tables and 8 figures. E.S.

WOOD—CHEMISTRY

CAMPBELL, W. G., FRAHN, J. L., HIRST, E. L., PACKMAN, D. F., and PERCIVAL, E. G. V. Wood starches. Part I. J. Chem. Soc.: 3489-98 (December, 1951).

The occurrence of starch in wood is discussed together with methods of isolating and purifying sapwood starches. The granular starch from elm sap-

wood contains 20.5% of amylose. The methylated starch was hydrolyzed and the products separated chromatographically, both on paper strips and on a cellulose column. The yield of tetramethylglucopyranose (4.3%) indicates that, in the amylopectin component, there are 20 glucose residues per terminal group. This conclusion is supported by the results of oxidation with periodate. 3 tables. E.S.

CLERMONT, L. P., and SCHWARTZ, H. The chemical composition of Canadian woods. Pulp Paper Mag. Can. 52, no. 13: 103-5 (December, 1951).

The following eight Canadian wood species were subjected to proximate and summative analyses: balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), black spruce (*Picea mariana*), jack pine (*Pinus banksiana*), white birch (*Betula papyrifera*), eastern hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*), and quaking aspen (*Populus tremuloides*). The proximate analyses included the following: solubilities in cold and hot water, ethyl ether, and 1% sodium hydroxide; acetyl; methoxyl; pentosans; ash; lignin; holocellulose; α-cellulose; hemicelluloses; and uronic anhydride. In addition, the hemicelluloses were analyzed for pentosans, uronic anhydride, and hexosans. The summative analyses comprised: alcohol-benzene solubility, hot-water solubility on the residue from the alcohol-benzene extraction, ash, acetyl, lignin, α-cellulose, and hemicelluloses. In comparison with softwoods, the hardwoods showed a higher pentosan, hemicellulose, and acetyl, and a lower lignin content. Except for white birch with about 41% α-cellulose content, all other α-cellulose values showed little variation (about 50%). 4 tables and 11 references. E.S.

JONES, J. K. N., and SCHOETTLER, J. R. Identification of L-rhamnose in aspenwood. Tappi 35, no. 1: 102A (January, 1952).

An analysis of trembling aspenwood meal gave the following results: 16.4% lignin, 86.4% holocellulose, 53.9% α-cellulose, 19.1% pentosan, 4.7% uronic anhydride, and 0.4% ash. The mixture of sugars obtained on hydrolysis with *N* sulfuric acid at 90°C. was examined by a paper chromatographic procedure and, in addition to xylose, galactose, arabinose, glucose, and mannose, L-rhamnose (less than 1%) has been isolated for the first time. Its function in the wood is unknown. 1 table. E.S.

WOOD—EXTRACTIVES

GRIPENBERG, JARL. Antibiotic substances from the heart wood of *Thuja plicata* D. Don. VII. A partial synthesis of thujic acid. Acta Chem. Scand. 5, no. 7-8: 995-1002 (1951). [In English] *cf.* B.I.P.C. 20: 525.

The author accomplished a partial synthesis of thujic acid by the conversion of hexahydrothujic acid into thujic acid. Definite evidence has been obtained that no cyclopropane ring is present in the molecule of thujic acid, and that the latter is 4,4-dimethyl-2,5,7-cycloheptatrienecarboxylic acid, as suggested in part VI of this series. 1 figure and 7 references. E.S.

WOOD—GAS GENERATION

WRIGHT, R. H., and HAYWARD, A. M. Kinetics of the thermal decomposition of wood. Can. J. Technol. 29, no. 12: 503-10 (December, 1951).

The effect of particle size and temperature on the rate of decomposition of dry western red-cedar and western hemlock was studied, when the sam-

ples were introduced suddenly into an atmosphere of nitrogen at 500, 700, and 900°C. The experiments were part of a study for producing fuel gas from waste wood. The results indicated that for cubical pieces the reaction is approximately of the one-half order; for disks it is of zero order. For cubes the rate constant is directly proportional to the specific surface and to the temperature, and the proportionality constants are the same for both species of wood. 6 figures. E.S.

WOOD OPERATIONS

ANON. Available publications and visual aids on logging efficiency and training methods. Pulp Paper Mag. Can. 52, no. 13: 140, 143 (December, 1951).

An annotated list of textbooks, handbooks, manuals, posters, and motion-picture films, some of them in French and English, is presented. E.S.

BUSCH, T. N. Use of sulkies and high boom arches in pulpwood logging. Paper Mill News 75, no. 3: 40, 42 (Jan. 19, 1952).

The use of sulkies or logging arches under practically clear cut conditions has proved to be entirely sound. The techniques developed for this type of logging by the International Paper Co. are described. 3 illustrations. M.W.

HAMILTON, D. P. Use of spar trees at Marathon. Pulp Paper Mag. Can. 52, no. 13: 135 (December, 1951).

The author describes the development of the use of spars and points out some of their advantages over A-frames. M.W.

HARKNESS, W. D. Forestry aspects of mechanical logging at Marathon. Pulp Paper Mag. Can. 52, no. 13: 122-3 (December, 1951).

The operating conditions, management plan, operating plan, and regeneration surveys of the Pic River pulpwood concession are discussed. M.W.

HUSAK, N. High lead yarding in bundles. Pulp Paper Mag. Can. 52, no. 13: 132 (December, 1951).

The operation of the high-lead system of bundle yarding which is used by Marathon Paper Mills of Canada Ltd. is outlined. M.W.

LUNAM, E. A. Mechanical slashing of pulpwood by Marathon. Pulp Paper Mag. Can. 52, no. 13: 129-30 (December, 1951).

The importance of the method of felling to good slasher production is stressed, and the development of a loading technique, the end haul, is described. The functions of the various members of the crew are also discussed. M.W.

OLSON, E. O. Latest mechanical developments on Marathon's operations. Pulp Paper Mag. Can. 52, no. 13: 124, 127 (December, 1951).

The improvements and innovations in yarders and slashers are outlined. M.W.

TATEISHI, M. High lead yarding in tree lengths. Pulp Paper Mag. Can. 52, no. 13: 138 (December, 1951).

The high-lead yarding of tree-length pulpwood which is employed by Marathon Paper Mills of Canada Ltd. is described. M.W.

WOOD ROOM

WEST, P. H. Barking and chipping 8-foot pulpwood. Paper Trade J. 134, no 3: 20, 22, 24, 26 (Jan. 18, 1952); *cf.* B.I.P.C. 22: 211.

Following a description of the new woodroom, the equipment which is employed for the barking and chipping of 8-ft. pulpwood at the Thilmany Pulp and Paper Co. is described. Processing pulpwood in 8-ft. lengths has resulted in a 15% increase in the daily output of pulp, the production of sufficient chips for a day's pulping in two 8-hr. shifts rather than three, with an accompanying reduction in personnel, a wood saving of 1%, and substantial savings in the cost of maintenance. 6 figures. M.W.

WOOD TRANSPORTATION

ANON. Tricky automatic log sorting. Pulp & Paper 26, no. 1: 79-80 (January, 1952); *cf.* B.I.P.C. 17: 735.

The methods and equipment employed in the segregation and allocation of logs floated down the St. Maurice River, Que. for the three companies: Brown Corp. at LaTuque, Consolidated Paper Corp. at Grand'Mère, Shawinigan Falls, and Three Rivers, and Canadian International Paper Co. at Three Rivers are described. The problem is facilitated by the fact that each mill uses logs of different length; the owner-company's mark is also hammered into the end of each stick. 1 map and 5 illustrations. E.S.

WOOD WASTE

GOODFELLOW, A. W. Pulpwood chips—a sawmill by-product. Pulp Paper Mag. Can. 52, no. 13: 101-2 (December, 1951).

The procedures are described which are used by a Canadian sawmill for converting slabs and edgings to chips at the mill and blowing these chips into boxcars. 6 illustrations. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ADHESIVES

BABCOCK, GLEN, E., JOHNSEN, VERNON L., and SMITH, ALLAN K. Fiberboard construction. U. S. patent 2,580,391. Filed Feb. 23, 1951. Issued Jan. 1, 1952. 4 claims. Assigned to the United States of America as represented by the Secretary of Agriculture. [Cl. 154-141; changed to 154-140]

A fiberboard laminating glue consists of 10-18 parts of soybean flour, 2-10 parts of soybean protein, 2.5-10 parts of a 20% solution of the ammonium salt of a copolymer of a four-carbon, alpha,beta-unsaturated dicarboxylic acid with styrene and the corresponding sodium salt thereof, 2.5-10 parts of saponified rosin, 10-15 parts of an 8% sodium hydroxide solution, and sufficient water to make a spreadable glue which contains 18-26% solids.

E.G.S.

HERITAGE, CLARK C. Phenolic adhesive and method of bonding wood plies. U. S. patent 2,574,784. Filed Dec. 26, 1944. Issued Nov. 13, 1951. 19 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 154-133]

An adhesive composition which is suitable for use in the manufacture of plywood comprises 8-100 parts of phenol-aldehyde (e.g., phenol-formaldehyde or -acetaldehyde) resin solution containing about 50% resin solids and, as an adhesive constituent, the reaction product obtained by the combination of 20 parts of comminuted bark (e.g., from white, western yellow, southern, or sugar pine), 40-50 parts of water, five parts of potassium carbonate, and four parts of potassium hydroxide.

E.G.S.

ALKALINE PROCESSES

MICHON, JACQUES B. M. Pulping process. U. S. patent 2,582,054. Filed Sept. 12, 1946. Issued Jan. 8, 1952. 4 claims. Assigned to La Cellulose Du Pin. [Cl. 92-13]

An alkaline pulping process is described in which wood chips are treated with hot alkaline cooking liquor (70 g./l. of active alkali) at about 100°C. for 0.5 hour; the treated chips are immersed in about four times their weight of alkaline cooking liquor preheated under pressure to about 180°; the liquor is drained from the digested pulp; and the pulp is cooked in its retained liquor at 170-180° for about 0.5 hour. The process can also be applied to straw, grasses, bagasse, and similar raw materials. 5 figures. E.G.S.

ALKALINE PROCESSES—RECOVERY

PAREN, PER. Process for treating waste liquor from paper. U. S. patent 2,582,792. Filed Dec. 2, 1946. Issued Jan. 15, 1952. 1 claim. Assigned to Jönköpings Mekaniska Werkstads Aktiebolag. [Cl. 23-48]

In a black liquor recovery process the liquor is sprayed vertically upward into the furnace space in such a manner that the liquor does not reach the walls or bottom of the furnace before being evaporated to a dry or nearly dry consistency. 3 figures. E.G.S.

BARKERS AND BARKING

ALFSEN, NIKOLAI. Device for barking of logs or the like. U. S. patent 2,581,617. Filed July 30, 1947. Issued Jan. 8, 1952. 5 claims. [Cl. 144-208]

A mechanical barker comprises two co-operating, coplanar peeling wheels which rotate in the same direction but at different peripheral speeds, with the result that there is a sliding effect between one of the wheels and the log, causing the wheel concerned to scrape the log and thus peel off the bark. Means are also included for scoring the bark and advancing the log. 4 figures. E.G.S.

HOLVECK, JOSEPH E., and ROCKWOOD, ARTHUR G. Hydraulic-type log debarker having centripetally directed jets mounted in circumferential groups radially adjustable for different size logs. U. S. patent 2,578,804. Filed April 30, 1946. Issued Dec. 18, 1951. 36 claims. Assigned to Worthington Pump and Machinery Corporation. [Cl. 144-208]

A hydraulic barker embodies control means for holding predetermined groups of nozzles inactive while permitting others to discharge high-pressure, high-velocity jets of water against a log. The positions of the nozzles can be adjusted in accordance with the diameter of the log being barked. 32 figures. E.G.S.

RAMBO, WILLIAM H., and DE RICE, HAROLD A. Hydraulic log barking apparatus. U. S. patent 2,579,613. Filed July 28, 1947. Issued Dec. 25, 1951. 6 claims. [Cl. 299-66]

A hydraulic barker utilizes a hydraulic mechanism for effecting the lengthwise movement of high-pressure water jets relative to a log. Means are included for adjusting the angle of impact of the jets for maximum efficiency of operation or for logs of various diameters. 6 figures. E.G.S.

BOARD

GOSS, WORTH C. Method of manufacturing sheet wood. U. S.

patent 2,581,652. Filed Jan. 19, 1948. Issued Jan. 8, 1952. 11 claims. Assigned to United States Sheetwood Company. [Cl. 18-47.5]

A process for the production of sheet lumber includes the steps of preparing a semicolloidal bonding agent by the wet grinding of brown rotted wood, producing a homogeneous mixture of moist lignocellulosic fibers (e.g., from Douglas-fir) and the bonding agent, forming a loosely felted pad of the mixture, compressing the pad in a steam-vented platen press at 250-550°F. to set the binder and produce a hard, rigid, boardlike body, removing the resulting board from the press, and baking it in an oven at about 360° until cured. 4 figures. E.G.S.

HALLONQUIST, EARL G. Dry process for making composite consolidated products with controlled presteaming of the raw materials. U. S. patent 2,581,654. Filed Nov. 21, 1949. Issued Jan. 8, 1952. 3 claims. Assigned to Plywood Research Foundation. [Cl. 18-47.5]

A process for the manufacture of hardboard comprises the steps of subjecting wood chips to 75-p.s.i. steam for 10-30 minutes, defibering the steamed chips in a grinder, forming a mixture of the resulting fibers and a thermosetting binder (e.g., a phenol-formaldehyde resin), dry forming the mixture into a mat, and consolidating the mat to a dense board under a pressure of 100-800 p.s.i. at 160-200°C. for 10-30 minutes. 1 figure. E.G.S.

BOARD—COATED

WISE, JOHN K. Coatings for insulation board. U. S. patent 2,581,058. Filed July 21, 1947. Issued Jan. 1, 1952. 5 claims. Assigned to United States Gypsum Company. [Cl. 106-214]

A decorative insulating board is coated with a dried composition which comprises gelatinized starch, pigment fillers, and an ester of a fatty acid which has 12-24 carbon atoms and a polyethylene glycol with a molecular weight of 3000-4000. E.G.S.

BOARD—SHEET FORMATION

BERTOLET, ELMER C., JR. Apparatus for producing airlaid fibrous webs. U. S. patent 2,581,069. Filed Sept. 24, 1945. Issued Jan. 1, 1952. Assigned to Raybestos-Manhattan, Inc. [Cl. 19-156]

An apparatus is designed for the formation of felt- or paperlike sheets from air suspensions of relatively long asbestos fibers (i.e., spinning-grade fibers) in admixture with 5-90% by weight of organic fibers (e.g., cotton, wool, silk, rayon, jute, ramie, flax, hemp, glass, saran, Vinyon, cellulose acetate, ethylcellulose, nylon, Aralac, etc.). 8 figures. E.G.S.

BROWNE, WILLIAM H. Methods of making resilient batts. Canadian patent 479,736. Filed Jan. 13, 1947. Issued Dec. 25, 1951. 4 claims. Assigned to Houdaille-Hershey Corporation.

This is the same as U. S. patent 2,571,334; *cf.* B.I.P.C. 22: 213. E.G.S.

USCHMANN, CURT. Fiber dispersing machine and method. U. S. patent 2,579,770. Filed July 30, 1947. Issued Dec. 25, 1951. 14 claims. Assigned to Cascades Plywood Corporation. [Cl. 154-1]

A machine which is designed for the manufacture of sheet lumber embodies a fiber-dispersing apparatus which is capable of dispersing controlled quanti-

ties of fluffy fiber or a fiber-adhesive mixture at a predetermined rate over a forming belt. The resultant preliminary fiber mat is subsequently consolidated by passage between a series of compacting rolls, the binder or plasticizer is heat activated, and the board is dried. 10 figures. E.G.S.

BOARD, BUILDING

CAMP, THOMAS P. Decorated wallboard and method of making the same. U. S. patent 2,581,076. Filed March 1, 1946. Issued Jan. 1, 1952. 9 claims. Assigned to United States Gypsum Company. [Cl. 154-86]

A decorative gypsum wallboard comprises a cementitious core and paper covering sheets. At least one of the covering sheets is coated with the reaction product of a borax-containing protein solution (e.g., casein, albumen, zein, or soybean or peanut protein) cooked at 170-210°F. for not less than 20 minutes. A flexibilizing agent (e.g., urea, glycerin, dicyandiamide, or ethylurea) and a water-insolubilizing composition (e.g., hexamethylenetetramine, formaldehyde, alum, or the soluble alkali-metal or ammonium chromates) are incorporated in the protein solution prior to application to the paper sheets. The resultant coated liner is characterized by its ability to resist the penetration of oil and varnish stains and also to provide a washable surface. E.G.S.

BOARD, CORRUGATED

MCKEE, ROBERT C. Container board. Canadian patent 479,933. Filed Jan. 20, 1950. Issued Jan. 1, 1952. 6 claims. Assigned to The Institute of Paper Chemistry.

This is the same as U. S. patent 2,568,349; *cf.* B.I.P.C. 22: 147. E.G.S.

BOARD, INSULATING

WILLEY, GRANT S., and FROST, ORCUTT W. Process of making acoustical tile. U. S. patent 2,581,993. Filed Dec. 6, 1948. Issued Jan. 8, 1952. 2 claims. Assigned to United States Gypsum Company. [Cl. 18-47.5]

A process for the manufacture of a slotted acoustical tile comprises the steps of applying a heated platen maintained at not less than 350°F. to the surface of a fibrous insulating board, simultaneously exerting a slight pressure on the board to compress its surface, maintaining heat and pressure on the board until it has been densified, cooling the densified surface, and cutting semielliptical grooves in the surface by means of a series of high-speed rotary saws. 5 figures. E.G.S.

BOARD, LAMINATED

MINNEAR, FESTUS L. Laminated product and method of laminating. U. S. patent 2,579,949. Filed June 18, 1947. Issued Dec. 25, 1951. 3 claims. Assigned to Continental Can Company, Inc. [Cl. 154-128]

A laminated wall tile consists of an outer paper ply (e.g., similar to blotting paper) which is printed to simulate wall tile, an intermediate sheet of woven glass fibers, and an inner sheet of paper which is provided with a mat surface suitable for adhering to a wall or the like. Prior to assembly into a laminated sheet, the three plies are impregnated with a polyester, contact-

pressure resin composition which contains a polybasic acid, a polyhydric alcohol, and a vinyl compound such as styrene. 4 figures. E.G.S.

BOARD SPECIALTIES

ELGIE, WILLIAM L. Handle carrier cartons. Canadian patent 479,747. Filed Dec. 2, 1949. Issued Dec. 25, 1951. 4 claims. Assigned to John Labatt Limited.

A partitioned bottle carrier embodies a carrying handle which may be folded into the body of the carrier when not in use. 5 figures. E.G.S.

HENNESSY, EDWARD J. Bottle carrier convertible to a toy house. U. S. patent 2,581,100. Filed Aug. 6, 1949. Issued Jan. 1, 1952. 6 claims. Assigned to Ray A. Washburn. [Cl. 46-11]

A cardboard bottle carrier includes means for detachably connecting the several cardboard sections in setup condition during the conversion of the cardboard blank from a carrier to a toy house. 5 figures. E.G.S.

O'REILLY, JOSEPH A. Combination shirt board and collar protector. U. S. patent 2,581,696. Filed Dec. 6, 1949. Issued Jan. 8, 1952. 11 claims. [Cl. 223-71]

An integral shirt board and collar protector is formed from a single cardboard blank; the collar-protecting element is formed from the central portion of the blank. 14 figures. E.G.S.

PERINO, DOMINIC A. Commodity bags. Canadian patent 479,323. Filed Jan. 17, 1950. Issued Dec. 11, 1951. 2 claims. Assigned to Milprint, Inc.

A marketing bag comprises a flexible, transparent body (e.g., rubber hydrochloride) and a relatively rigid cardboard strip which is secured to the top edge of the body. This is the same as U. S. patent 2,563,616; *cf.* B.I.P.C. 22: 64. 5 figures. E.G.S.

SCOTT, HARRY A., and SPIEKER, JOHN W. Container end structure. U. S. patent 2,579,974. Filed Oct. 29, 1947. Issued Dec. 25, 1951. 1 claim. Assigned to Continental Can Company, Inc. [Cl. 229-43; changed to 229-47]

An end structure for a fiber container is designed in such a manner that, regardless of the thickness of the container wall, the closure head is tightly clamped in sealing position by a retaining ring without the necessity of a change in the dimensions of the head or ring to compensate for changes in the thickness of the container wall. 11 figures. E.G.S.

VARNER, ALVIE E. Bending process. U. S. patent 2,581,222. Filed July 19, 1948. Issued Jan. 1, 1952. 2 claims. Assigned to Masonite Corporation. [Cl. 18-56]

A process which is described for the angular bending of a thick, porous fiber blank (½-¾ inch thick, sp. gr. 0.5-0.7) comprises the steps of hot pressing a single groove in the side of the board which is to constitute the inner surface of the bend and bending the blank under heat and pressure along the groove line, while supporting the blank on both sides of the groove. The resultant structure is consolidated to an angular fiberboard product which is about ⅛-3/16 inch thick and has a specific gravity of about 1.2. 9 figures. E.G.S.

BOARD TESTING—PHYSICAL

MCKEE, ROBERT C., and SEARS, GEORGE R. Method and apparatus for testing paperboard. Canadian patent 479,932. Filed July 13, 1949. Issued Jan. 1, 1952. 12 claims. Assigned to The Institute of Paper Chemistry.

An instrument is designed for the measurement of the tearing properties of paperboard and the like. The apparatus produces a relatively straight tear without delaminating the board and thus provides test data which are direct measures of the tearing strength and the resistance to continued tear. In accordance with the method of the invention, a paperboard sample is clamped along lines which are parallel to and spaced symmetrically from the line along which the tearing strength of the sample is to be determined. The clamped portions are then rotated relative to one another about an axis which is normal to the line along which the tear is to be produced, which bisects the length of the specimen along the proposed line of tear, and which passes through the center of the specimen (i.e., the axis falls midway between the outer plane surfaces of the specimen). In order to secure reproducible results and to test the property of continued tear rather than initial tear, the sample, before testing, is cut inwardly for a short distance at each end of the proposed line of tear, and the center of the sample is cut away to leave a symmetrically located opening. 7 figures. E.G.S.

CELLULOSE—DEGRADATION

DORSETT, ROWELL R. Process of treating cellulosic and similar materials. U. S. patent 2,580,286. Filed Dec. 4, 1946. Issued Dec. 25, 1951. 3 claims. [Cl. 117-138.5]

A method of treating cellulosic materials (e.g., textiles, paper, or modified cellulose) to inhibit their degradation when contacted with acid consists in wetting the materials with a 0.5-10.0% aqueous solution of an alkali-metal, molecularly dehydrated phosphate which has a molar ratio of alkali-metal oxide to phosphorus pentoxide of 0.8:1 to 2:1, removing the materials from contact with the solution, and drying the same. E.G.S.

DE-INKING

DRIESSEN, CORNELIUS C. Process of deinking printed waste paper. U. S. patent 2,580,161. Filed March 13, 1947. Issued Dec. 25, 1951. 1 claim. [Cl. 92-1.5]

A process for the deinking of printed waste paper comprises the steps of preparing an aqueous solution of a water-soluble alkali (e.g., caustic soda, soda ash, water glass, sodium phosphate, or the like), a soap in the form of a sodium salt of a fatty acid which has 6-18 carbon atoms (e.g., sodium palmitate), and sodium hypochlorite; heating the solution to a temperature consistent with the easy formation of pulp by agitation; introducing a predetermined charge of waste paper into the solution and agitating it to form a pulp; maintaining the resultant mass at a pH of 8.5-10.5; and removing colloidalized carbon from the mass. E.G.S.

MASSEY, PETER J., and GOODWILL, FREDERIC C. Deinking and bleaching of paper. U. S. patent 2,582,496. Filed Oct. 9, 1947. Issued Jan. 15, 1952. 4 claims. Assigned to St. Regis Paper Company. [Cl. 92-1.5]

A deinking process comprises the steps of pulping a printed paper stock in a hot, aqueous deinking solution (e.g., containing 0.8-5% of sodium

peroxide and 4-8% of sodium silicate) to produce a 3-5% pulp suspension, cooking the resulting mixture at 125-200°F. for 3-5 hours, washing the resulting pulp to free it of ink and the deinking solution, and bleaching the washed pulp. 1 figure. E.G.S.

DISPENSING CONTAINERS

BUTTERY, KENNETH T. Display container for individually wrapped articles of merchandise and supporting tray therefor. U.S. patent 2,582,476. Filed June 20, 1949. Issued Jan. 15, 1952. 7 claims. Assigned to Sutherland Paper Company. [Cl. 206-45.14; changed to 206-45.19]

A display package for cellophane-wrapped stick candy incorporates an inner supporting tray which is flanged and thus adapted to receive the twisted ends of the individual wrappers. A transparent window is also included in the outer face of the package. 4 figures. E.G.S.

CASLER, ROGER H. Dispensing container. U. S. patent 2,581,237. Filed Sept. 27, 1946. Issued Jan. 1, 1952. 16 claims. Assigned one half to Ex-Cell-O Corporation and one half to a group comprising Ace C. Fessenden and Ace Carton Corporation. [Cl. 229-17]

A container top and protective cover flap for a dispensing opening are constructed in such a manner that after the flap is opened, it may be bent rearwardly and frictionally locked with a portion of the container top. The arrangement is particularly adapted for use with paperboard milk containers. This corresponds to Canadian patent 472,368; *cf.* B.I.P.C. 21: 663. 13 figures. E.G.S.

GORDON, ROSALIE A. Face powder box. U. S. patent 2,579,490. Filed June 15, 1948. Issued Dec. 25, 1951. 1 claim. [Cl. 229-51]

A cylindrical box for face powder incorporates an inner paper cover which is scored along concentric circles so as to permit the formation of dispensing openings of progressively increasing size. 6 figures. E.G.S.

ONKEY, THEODORE F. Dispensing packages. Canadian patent 479,773. Filed July 22, 1949. Issued Dec. 25, 1951. 4 claims. Assigned to Roberts Rouge Company.

A cylindrical paperboard dispensing package for a stick of lubricant, dressing compound, polishing compound, or the like incorporates a metal foil liner which serves to prevent the absorption of the packaged substance by the paperboard. 4 figures. E.G.S.

O'REILLY, JOSEPH A. Paper box. U. S. patent 2,580,586. Filed June 13, 1949. Issued Jan. 1, 1952. 4 claims. [Cl. 229-7]

A rigid paper container for liquids and granular materials is provided with an outside slip-fit cover which can be applied mechanically after the container has been filled. 14 figures. E.G.S.

ROSENMAN, ABRAHAM W., and GREISER, RUDOLPH F. Dispensing and disposing tissue container. U. S. patent 2,579,758. Filed Feb. 12, 1949. Issued Dec. 25, 1951. 1 claim. [Cl. 206-57; changed to 206-37]

A dispensing container for facial tissues is constructed of paper which is impregnated with a wax, oil, or natural or synthetic resin to render it moisture resistant. 9 figures. E.G.S.

STUE, TRYGGVE B. Package. U. S. patent 2,579,880. Filed Sept. 15, 1947. Issued Dec. 25, 1951. 4 claims. [Cl. 229-9]

A cardboard cigarette package comprises an inner tray member and a co-operating outer sleeve. A tuck flap which is formed as part of the tray can be used to withdraw the inner member from the sleeve. 3 figures. E.G.S.

TINSLEY, GEORGE C. Dispensing container for coiled wire. U. S. patent 2,579,131. Filed Dec. 10, 1948. Issued Dec. 18, 1951. 2 claims. Assigned to Precision Steel Warehouse, Inc. [Cl. 206-52; changed to 206-56]

The wall of a dispensing carton for tension-coiled music wire is die cut to form a removable central section which, when removed, provides a dispensing opening and radial wire-retaining notches. 3 figures. E.G.S.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

HILL, HAROLD S., and BEATH, LAURENCE R. Methods of concentrating waste sulphite liquor. Canadian patent 479,770. Filed March 22, 1946. Issued Dec. 25, 1951. 12 claims. Assigned to Price Brothers & Company, Ltd.

Spent sulfite liquor is withdrawn from a reservoir of concentrated liquor, combined with dilute liquor, and pumped to an electrical conductance heater, where it is heated between spaced electrodes and concentrated by evaporation. The resultant water vapor is removed in a cyclone separator, and a portion of the concentrated liquor is returned to the reservoir; the remainder of the liquor is bled off to a storage tank. The flash steam which results from the evaporation process is utilized for the cooking of pulp. 4 figures. E.G.S.

FOLDING BOXES

BUTTERY, KENNETH T. Collapsible trays or cartons. Canadian patent 479,372. Filed Aug. 10, 1949. Issued Dec. 11, 1951. 10 claims. Assigned to Sutherland Paper Company.

A collapsible tray or carton is formed from an integral blank which can be quickly erected by hand or machine. This is the same as U. S. patent 2,488,704; *cf.* B.I.P.C. 20: 285. 6 figures. E.G.S.

BUTTERY, KENNETH T. Covered containers. Canadian patent 479,980. Filed Dec. 3, 1949. Issued Jan. 1, 1952. 7 claims. Assigned to Sutherland Paper Company.

A covered paperboard container incorporates a moisture-resistant liner which is adhesively attached to the rear wall of the carton. This is the same as U. S. patent 2,503,798; *cf.* B.I.P.C. 20: 680. 5 figures. E.G.S.

BUTTERY, KENNETH T. Tray type carton. U. S. patent 2,578,878. Filed July 15, 1947. Issued Dec. 18, 1951. 5 claims. Assigned to Sutherland Paper Company. [Cl. 229-35]

The end walls and corner flaps of a collapsible tray or box are substantially wider than the side walls, so that the erected box has the effect of

recessed side walls for exposing the contents; the high end walls serve to protect the packaged goods. This corresponds to Canadian patent 468,711; *cf.* B.I.P.C. 21: 209. 7 figures. E.G.S.

BUTTERY, KENNETH T., and STENGER, RICHARD C. Collapsible trays or boxes. Canadian patent 479,371. Filed Aug. 10, 1949. Issued Dec. 11, 1951. 7 claims. Assigned to Sutherland Paper Company.

A collapsible tray or box which is formed from an integral blank has interlocking walls which are supported against bulging and collapsing stresses. This is the same as U. S. patent 2,488,706; *cf.* B.I.P.C. 20: 285. 6 figures. E.G.S.

EWALD, GEORGE W. Container for coiled ribbons and the like. U. S. patent 2,582,422. Filed May 28, 1949. Issued Jan. 15, 1952. 2 claims. [Cl. 206-52]

A cardboard container designed for use in the packaging of coiled articles, such as ribbon, tape, and the like, is provided with a closure flap which has a viewing window. 5 figures. E.G.S.

FREEL, WILLIAM G., and JONES, SAMUEL F. Carton. U. S. patent 2,581,400. Filed Sept. 9, 1947. Issued Jan. 8, 1952. 3 claims. Assigned to William P. Frankenstein. [Cl. 229-33; changed to 229-31]

A double-wall folding carton is constructed from stock which is finished on only one side; the structure is assembled in such a manner that only the finished surface is exposed in the erected carton. 19 figures. E.G.S.

MELLER, REGINALD B. Method of folding cartons. U. S. patent 2,580,180. Filed June 23, 1947. Issued Dec. 25, 1951. 2 claims. Assigned to Bemiss-Jason Company. [Cl. 93-49]

A folding box employs an edge-to-edge interlocking arrangement in which one cut edge on one panel engages a cut edge on the other panel along a substantial length, whereby the board is subjected to compression at the interlock rather than tearing. 13 figures. E.G.S.

MELLER, REGINALD B. Self-locking folding box. U. S. patent 2,580,181. Filed Dec. 4, 1947. Issued Dec. 25, 1951. 4 claims. Assigned to Bemiss-Jason Company. [Cl. 229-35]

A folding box embodies a corner-locking arrangement in which a cut edge on one blank portion interengages a cut edge on another blank portion, so that an edge-to-edge interlock of substantial length results. 10 figures. E.G.S.

SAIDEL, WILLIAM R. Folding carton. U. S. patent 2,579,760. Filed March 18, 1949. Issued Dec. 25, 1951. 5 claims. [Cl. 229-27]

A transversely partitioned display carton is constructed from a single sheet of chipboard, bleached manila board, lined board, patent-coated board, board stock laminated with greaseproof sheeting, or the like. 11 figures. E.G.S.

SCHAEFER, EDWARD G. Container. U. S. patent 2,579,518. Filed Dec. 21, 1946. Issued Dec. 25, 1951. 5 claims. [Cl. 229-32]

A glued or corner-locked two-piece container for baked goods embodies identical top and bottom sections, so that the use of only one die is required in its construction. 11 figures. E.G.S.

THEANDER, PER O. Self-locking box. U. S. patent 2,579,346. Filed April 29, 1948. Issued Dec. 18, 1951. 2 claims. [Cl. 229-45]

A self-locking box is provided with a number of slots in its walls and cover which are so arranged that outwardly bent portions of the cover will engage corresponding slots in the side walls and will thus lock the cover in position. 6 figures. E.G.S.

VINEBERG, JOSEPH H. Collapsible boxes. Canadian patent 479,433. Filed July 8, 1949. Issued Dec. 18, 1951. 9 claims.

A one-piece garment-carrying box is provided with a handle and hanger and is of sufficient depth to accommodate any garment for which the box may be used. This corresponds to U. S. patent 2,555,719; *cf.* B.I.P.C. 21: 817. 5 figures. E.G.S.

INTERIOR PACKING

PAIGE, RICHARD E. Combination carton and wrapper for fragile articles. U. S. patent 2,580,043. Filed Jan. 12, 1946. Issued Dec. 25, 1951. 5 claims. [Cl. 229-14; changed to 206-65]

A protective cardboard wrapper for irregularly shaped fragile articles (e.g., goblets) is designed to be inserted diagonally into a square-shaped carton in such a manner that the folded edges of the wrapper are engaged by the carton walls and the packaged articles are protected against shocks during handling or shipment. 11 figures. E.G.S.

MACHINERY—BOARD MACHINES

SIMPSON, ALVAN D. Positive pressure machine for forming continuous strips of asbestos-cement compositions and the like. U. S. patent 2,581,210. Filed April 29, 1948. Issued Jan. 1, 1952. 10 claims. Assigned to The Forming Machine Company of America, Inc. [Cl. 92-43]

A cylinder machine is adapted for the formation of asbestos shingles and siding from a water suspension of asbestos and cement. 25 figures. E.G.S.

MACHINERY—CONVERTING MACHINERY

CONDON, ROBERT S. Paper container lining machine. U. S. patent 2,579,907. Filed April 25, 1949. Issued Dec. 25, 1951. 20 claims. Assigned to Continental Can Company, Inc. [Cl. 93-36.01]

A container-lining machine embodies means for feeding liner material from a supply roll, corrugating the liner material, cutting the material into proper liner lengths, serially presenting containers at a liner-inserting station, shaping each length of corrugated liner into a cylinder opposite a container at each station, and inserting each shaped liner into a container at said station. 15 figures. E.G.S.

GREY, VICTOR A. Banding machine. U. S. patent 2,578,799. Filed March 30, 1945. Issued Dec. 18, 1951. 10 claims. Assigned to Kartridg-Pak Machine Co. [Cl. 93-3; changed to 53-25]

A machine is adapted for the high-speed, automatic banding of link sausages between two continuous paper strips. Means are provided for severing the banding strips after a predetermined number of sausages have been banded and connected together. 14 figures. E.G.S.

LEAVENS, WILLIAM B., JR. Boxmaking machine. U. S. patent 2,580,562. Filed Oct. 22, 1949. Issued Jan. 1, 1952. 18 claims. [Cl. 93-44]

A mechanism is adapted for the production of boxes by the formation of box blanks about a series of continuously moving form blocks. 10 figures. E.G.S.

LEVKOFF, DAVID. Machine for setting-up cartons. U. S. patent 2,581,115. Filed June 15, 1949. Issued Jan. 1, 1952. 9 claims. [Cl. 93-53]

In a carton-folding machine the flattened box blanks are removed successively from the bottom of a stack and moved to end-folding means where the end and side walls of the boxes or trays are erected to a vertical position, and the end flaps are downfolded and tucked into slits located at the junctions of the bottom and end walls. 10 figures. E.G.S.

LIENART, MARCEL. Multiply bag tubing machine. U. S. patent 2,581,801. Filed June 18, 1948. Issued Jan. 8, 1952. 14 claims. Assigned to St. Regis Paper Company. [Cl. 93-63; changed to 93-77]

A machine is adapted for the manufacture of multiwall paper tubes for stepped-end bags. The tubes are subsequently formed into finished bags on a bottoming machine. 38 figures. E.G.S.

LINSTEDT, WILLIAM F. Apparatus for setting up boxes. U. S. patent 2,581,491. Filed Nov. 26, 1943. Issued Jan. 8, 1952. 6 claims. Assigned to Kraft Foods Company. [Cl. 93-39]

A boxmaking machine includes means for unfolding prefabricated paperboard tray elements, for inserting tubular box wall elements into the unfolded trays, and for feeding the assembled wall and tray elements to another machine for subsequent operations on the boxes. 19 figures. E.G.S.

NORDQUIST, RONALD E. J., and COX, HERBERT F., JR. Container end assembling machine. U. S. patent 2,578,731. Filed March 12, 1946. Issued Dec. 18, 1951. 3 claims. Assigned to American Can Company. [Cl. 93-55.1]

A mechanism which is adapted for curling the flange of a fiber container body to overlap an end cap incorporates a set of air blast nozzles for pressing and holding the annular flange inwardly toward the end member so that the flange is properly engaged by a curling head. 3 figures. E.G.S.

PAGENDARM, EDWARD J. Carton folder. U.S. patent 2,580,189. Filed April 7, 1947. Issued Dec. 25, 1951. 9 claims. Assigned to Bemiss-Jason Company. [Cl. 93-51]

A die-and-plunger mechanism is designed for use in the erection of folding boxes which incorporate corner-locking constructions. 22 figures. E.G.S.

PERILLI, LOUIS. Carton blank handling machine. U. S. patent 2,582,393. Filed Feb. 25, 1949. Issued Jan. 15, 1952. 16 claims. [Cl. 93-53]

A semiautomatic machine is adapted for taking flat box blanks from a pile, setting them up rapidly, and delivering the erected boxes to a loading station. 8 figures. E.G.S.

RUTKIEWICZ, JOSEPH, and GRANO, GASPARE. Box liner spreading jig. U. S. patent 2,581,447. Filed Oct. 24, 1945. Issued Jan. 8, 1952. 1 claim. [Cl. 93-36.01]

A jig is designed for use in the insertion of a paper liner or envelope into an open box, crate, or container. 4 figures. E.G.S.

SAYRE, GORDON B., and WINZ, OSCAR. Machine for folding carton inserts. U. S. patent 2,580,846. Filed May 14, 1947. Issued Jan. 1, 1952. 23 claims. Assigned to Boonton Molding Company. [Cl. 93-1]

A machine is adapted for the folding of inserts or spacers for use in cartons of various size, such as might be used in the packaging of molded-plastic radio cabinets. Means are included for folding two inserts in a single operation of the machine, even though the inserts may be of different dimensions. 13 figures. E.G.S.

MACHINERY—DRYERS

WESTPHAL, WALTER. Drier roll. U. S. patent 2,582,365. Filed May 19, 1948. Issued Jan. 15, 1952. 7 claims. Assigned to Rexford Paper Company. [Cl. 34-124]

A jacketed drier roll is equipped with a stationary condensate siphon pipe, the inner end of which is directed toward the lowermost portion of the roll so that the collected condensate is exhausted from the lower portion of the jacket, regardless of the position of stoppage of the roll. 3 figures. E.G.S.

MACHINERY—FELTS

GATES, PERCIVAL T. Industrial and papermaker's felt. U. S. patent 2,581,790. Filed March 1, 1948. Issued Jan. 8, 1952. 6 claims. Assigned to Drycor Felt Company. [Cl. 28-79]

A woven papermaking felt is described in which the nap surfaces are produced by the needling of pile fleeces to the woven felt fabric. The needling process consists in forcing the fibers of the fleeces into and through the fabric, thus leaving parts of the fibers upon the surface to form a cushioning, paper-forming, or abrasion-resisting surface; other portions of the fibers are engaged in the woven fabric and interlocked with the fabric fibers, as well as with the other fibers of the added fleeces. This corresponds to Canadian patent 472,137; *cf.* B.I.P.C. 21: 667. 3 figures. E.G.S.

MACHINERY—HEAD BOX

CRAM, HERVEY G. Stock regulator. U.S. patent 2,579,226. Filed Aug. 26, 1948. Issued Dec. 18, 1951. 8 claims. Assigned to Combined Locks Paper Co. [Cl. 137-78]

A headbox incorporates an adjustable discharge gate arranged directly

in the outlet of the box, by means of which the rate of flow of the stock from the box to the paper machine can be accurately controlled. 4 figures. E.G.S.

MACHINERY—PACKAGING MACHINERY

ANDERSON, SWAN F. Folding and filling machines. Canadian patent 479,404. Filed July 3, 1947. Issued Dec. 11, 1951. 18 claims. Assigned one half to Ralph Anderson.

A compact packaging machine incorporates means for setting up a knocked-down carton, filling it with ice cream or other material, and then closing the carton. 27 figures. E.G.S.

DEUTSCH, FRED M., WARZINIK, MORRIS, and MEIER, ANTON M. Method and apparatus for packaging. Canadian patent 479,945. Filed April 30, 1951. Issued Jan. 1, 1952. 35 claims. Assigned to Marathon Corporation.

This is the same as U. S. patent 2,567,598; *cf.* B.I.P.C. 22: 151. E.G.S.

NOE, HAROLD C. Packaging machine. U. S. patent 2,580,456. Filed Oct. 22, 1945. Issued Jan. 1, 1952. 2 claims. Assigned to Kidde Manufacturing Co., Inc. [Cl. 53-83]

In an apparatus which is adapted for the production of tubular package covers for solid cylinders of sterilized, medicated cotton (e.g., tampons), a continuous paper tape is moved lengthwise, bent laterally to form a tube, and the longitudinal edges of the tape are constituted as an axially layered seam or as peripherally overlapping layers of an axial seam. 25 figures. E.G.S.

SALFISBERG, LEROY L. Machines and methods for crushing tablets in packages. Canadian patent 478,732. Filed March 24, 1947. Issued Nov. 20, 1951. 4 claims. Assigned to Ivers-Lee Company.

An apparatus is provided for sealing tablets between two strips of a sheet material (e.g., paper, cellophane, or Pliofilm) by crimping or corrugating the edges of the strips; means are included for crushing the tablet within the package. The device is particularly adapted for the use of a thermoplastic, heat-sealable sheet material. This is the same as U. S. patent 2,478,505; *cf.* B.I.P.C. 20: 288. 4 figures. E.G.S.

STEPHANO, CONSTANTINE S. Article wrapping apparatus. U. S. patent 2,581,309. Filed Sept. 12, 1949. Issued Jan. 1, 1952. 9 claims. Assigned to Stephano Brothers. [Cl. 53-149]

An end sealer is incorporated in the design of a cigarette-wrapping machine. 6 figures. E.G.S.

MACHINERY—PASTING MACHINE

DERDERIAN, EDWARD J. Case sealing machine. U. S. patent 2,579,803. Filed Dec. 15, 1947. Issued Dec. 25, 1951. 4 claims. Assigned to Elliott Manufacturing Company. [Cl. 53-145]

A case-sealing machine is adapted for sealing the top and bottom flaps of a fiber case after the case has been loaded with packages, cans, or cartons. 7 figures. E.G.S.

DERDERIAN, EDWARD J. Fiber case gluing machine. U. S. patent 2,579,802. Filed May 15, 1945. Issued Dec. 25, 1951. 3 claims. Assigned to Elliott Manufacturing Company. [Cl. 93-36.4]

A gluing machine is designed for the application of adhesive to the inner flaps of a fiber case in such a manner that the adhesive does not contact the contents of the case or undesirable areas. 5 figures. E.G.S.

WEEKS, NORMAN E. Methods of adhesively securing valve sleeves to bags. Canadian patent 479,447. Filed Dec. 1, 1950. Issued Dec. 18, 1951. 2 claims. Assigned to Bemis Bro. Bag Company.

A method is described for adhesively uniting valve sleeves in bag valves by means of a thermoplastic composition. The process is designed to be carried out on the apparatus described in U. S. patent 2,489,210; *cf.* B.I.P.C. 20: 289. 8 figures. E.G.S.

MACHINERY—PRESSES

HORNBOSTEL, LLOYD. Press roll assemblies. Canadian patent 479,665. Filed April 1, 1950. Issued Dec. 25, 1951. 2 claims. Assigned to Beloit Iron Works.

A fluid pressure-controlled horizontal press assembly is provided with a stationarily mounted middle roll and pivotally mounted outer rolls; fluid pressure-actuated means are employed to maintain the proper pressure between the various rolls. This is the same as U. S. patent 2,512,648; *cf.* B.I.P.C. 20: 832-3. 3 figures. E.G.S.

MACHINERY—PULPERS

ROBERSON, CYRUS E. Stuff treatment apparatus. U. S. patent 2,581,143. Filed April 2, 1947. Issued Jan. 1, 1952. 1 claim. Assigned to The Noble & Wood Machine Company. [Cl. 92-26]

A centrifugal junk extractor is designed for use in the repulping of used paper, board, and the like which contains foreign materials (e.g., paper clips, rubber bands, cellophane, wet-strength paper, and the like). 1 figure. E.G.S.

MACHINERY—ROLL GRINDING APPARATUS

MINARIK, RUDOLF G., and ISAKSON, ERIC N. In-place resurfacing of ponderous cylinders. U. S. patent 2,579,391. Filed June 13, 1946. Issued Dec. 18, 1951. 1 claim. Assigned to Paper Patents Company. [Cl. 51-251]

An assembly of motor-driven rollers and an endless abrasive belt is adapted for the in-place resurfacing of the main drying cylinders of Yankee machines. During the resurfacing operation steam is supplied to the drying cylinder at the same pressure as is used in the manufacturing operation so as to reproduce an actual service condition. The cylinder is driven by an electric motor through a worm gear and pinion arrangement at about 10 r.p.m., and the belt rolls are driven directly by the same motor so that the peripheral speed of the rolls is about 2500 feet per minute. 2 figures. E.G.S.

MACHINERY—ROLL STANDS

ROSELIUS, LOUIS W. Mill roll stand. U. S. patent 2,581,711.

Filed April 14, 1947. Issued Jan. 8, 1952. 2 claims. Assigned to S&S Corrugated Paper Machinery Co., Inc. [Cl. 242-58]

A mill-roll stand is adapted for the rotatable support of a mill roll of heavy kraft paper prior to its use in various corrugating operations. Roller means are provided for supporting the roll peripherally and permitting it to unwind under the tension exerted on the sheet by the corrugating apparatus. 7 figures. E.G.S.

MACHINERY—SHOWERS

PREVOST, BRUNO E. Disk nozzle shower device. U. S. patent 2,581,289. Filed Feb. 9, 1949. Issued Jan. 1, 1952. 6 claims. Assigned to John W. Bolton & Sons, Inc. [Cl. 299-104; changed to 299-59]

A disk-type spray nozzle device for use on paper machines is designed for installation not only in pipes of relatively large cross section, but also in pipes whose cross-sectional diameter is only slightly greater than the diameter of the nozzle. 6 figures. E.G.S.

MACHINERY—SLITTERS AND WINDERS

DICKHAUT, CHARLES A. Friction drum winding machine. U. S. patent 2,581,242. Filed Aug. 25, 1947. Issued Jan. 1, 1952. 15 claims. Assigned to John Waldron Corporation. [Cl. 242-65]

A web-winding machine comprises a winding drum over which the web passes, a core on which the web is wound by peripheral contact with the drum, movably mounted bearings in which the core is journaled, means for supporting the bundle in co-operation with the bearings, and means for moving the bearings along the weight-supporting means away from the winding drum. The device provides a uniform winding pressure and permits the support of the bundle independently of the winding drum. 10 figures. E.G.S.

HASWELL, HENRY L. Winding machine. U. S. patent 2,582,429. Filed Aug. 20, 1946. Issued Jan. 15, 1952. 3 claims. Assigned to Ecusta Paper Corporation. [Cl. 242-65]

A paper winder includes a provision for the horizontal displacement of the winding mandrel so that the paper roll is positioned during winding without any of its weight resting on the driving roll. 4 figures. E.G.S.

MATERIALS HANDLING

HEINO, ARNE W. Manufacture of bonded fiber mats. Canadian patent 479,800. Filed Nov. 28, 1947. Issued Dec. 25, 1951. 15 claims. Assigned to Wood Conversion Company.

A mechanism is described for transferring an undried, bonded, low-density fiber mat from a forming belt to a drying belt; the undried mat is removed from the forming belt by being bounced in transit. This is the same as U. S. patent 2,493,194; *cf.* B.I.P.C. 20: 443. 3 figures. E.G.S.

METERS AND RECORDERS

STAEGE, STEPHEN A. Paper machinery. Canadian patent 479,450. Filed Feb. 8, 1949. Issued Dec. 18, 1951. 15 claims. Assigned to The Black-Clawson Company.

A pressure-responsive electromechanical control device is designed for use in the maintenance of a constant liquid level in a machine headbox, cylinder machine vat, or the like. 9 figures. E.G.S.

MOLDED PULP ARTICLES

JOHNSON, ARTHUR H. Acoustic diaphragm. U. S. patent 2,582,130. Filed Oct. 20, 1948. Issued Jan. 8, 1952. 1 claim. Assigned to Hawley Products Company. [Cl. 181-32]

A molded-fiber speaker diaphragm incorporates a re-entrant member which serves to prevent rises and dips in the frequency-response curve of the diaphragm. It is claimed that the diaphragm is capable of reproducing both high- and low-frequency sounds which correspond in intensity, timbre, and other qualities with the originally produced sound waves. 5 figures. E.G.S.

RANDALL, WALTER H. Molded carton for fragile articles. U. S. patent 2,578,739. Filed Dec. 24, 1947. Issued Dec. 18, 1951. 3 claims. Assigned to The Canal National Bank of Portland and William B. Nulty. [Cl. 229-2.5]

A molded-pulp egg carton incorporates an interlocking device which is claimed to resist the tendency of the base and cover sections to slide laterally relative to one another when the closed carton is subjected to a downward, collapsing pressure. 3 figures. E.G.S.

NUTSHELLS

AYERS, JOSEPH W. Phonograph record molding compositions and records. U. S. patent 2,582,741. Filed Oct. 18, 1947. Issued Jan. 15, 1952. 16 claims. Assigned to Agrashell, Inc. [Cl. 260-9; changed to 106-37]

A thermoplastic, phonograph record-molding composition contains an extender composed of finely divided walnut shell flour, the particles of which are not more than 30 microns in diameter and 90% of which are finer than 25 microns. E.G.S.

PACKAGING

MULLINIX, CHARLES D. Cooky bag. U. S. patent 2,582,346. Filed March 29, 1946. Issued Jan. 15, 1952. 1 claim. [Cl. 229-55]

A cellophane bag which is designed for the packaging of cookies, cakes, pastries, and the like incorporates a paperboard stiffening element which is adhesively attached to the rear inner wall of the cellophane envelope. 8 figures. E.G.S.

SCHENK, PETER. Ice-cream pop manufacturing and packaging. U. S. patent 2,582,655. Filed Feb. 8, 1949. Issued Jan. 15, 1952. 11 claims. [Cl. 99-180]

A cardboard wrapper for chocolate-covered ice cream suckers serves as a mold for the ice cream in the manufacture of the suckers. The individual wrappers are formed as parts of a separable, compartmented structure. 7 figures. E.G.S.

WEISBERG, ABRAHAM E. Container for packaging merchandise. U. S. patent 2,580,712. Filed June 3, 1949. Issued Jan. 1, 1952. 1 claim. [Cl. 229-53; changed to 229-55]

A multiwall transparent bag for the packaging of textiles, notions, or the like is constructed of glassine and Pliofilm sheets which are adhesively joined along their respective margins. 4 figures. E.G.S.

PAPER—COATED

BARRETT, WILLIAM H., and ASDELL, BERNARD K. Process for coating paper. U. S. patent 2,582,407. Filed May 29, 1946. Issued Jan. 15, 1952. 5 claims. Assigned to Minnesota and Ontario Paper Company. [Cl. 117-111]

The surface of a moving paper web is brushed while the paper is under tension, and the paper is then passed between an applicator roll and a backing roll. A coating material is picked up by the applicator roll from a fountain, and a metering roll controls the amount of material that the applicator roll will transfer to a smoothing roll. Surface defects in the coating film are then removed by the smoothing rolls, and the film is transferred to the paper while supported on the backing roll. The coating film is dried, and a second application of coating material is made on the same side of the web. The other side of the web is subsequently coated in a similar manner. The process is the same as that included in Canadian patent 453,300; *cf.* B.I.P.C. 19: 371. 6 figures. E.G.S.

PAPER SPECIALTIES

ALLEN, ADDA M. Bib structure. U. S. patent 2,580,388. Filed Feb. 4, 1948. Issued Jan. 1, 1952. 1 claim. [Cl. 2-49]

A disposable bib comprises a front face or ply of soft, thin tissue and a waterproof backing sheet of cellophane, Pliofilm, or polyethylene. 8 figures. E.G.S.

BEERY, DONALD W., EBERL, JAMES J., and INGRAM, ALVIN R. Sanitary napkin. U. S. patent 2,578,664. Filed May 8, 1947. Issued Dec. 18, 1951. 2 claims. Assigned to Johnson & Johnson. [Cl. 154-116]

A sanitary napkin is provided in which the gauze wrapper surrounding the absorbent material will not separate and become detached from the material. 2 figures. E.G.S.

BROUDY, ALBERT M. Envelope. U. S. patent 2,580,886. Filed Jan. 21, 1950. Issued Jan. 1, 1952. 2 claims. [Cl. 281-3; changed to 281-38]

A mailing envelope which is adapted to be bound into periodicals, mail-order catalogs, and the like is constructed in such a manner that all printed data are included on one side of the envelope blank. When the blank has been folded and assembled, all printing is concealed except the return address on the face of the envelope. 6 figures. E.G.S.

CLARK, FRANK M. Insulating and dielectric material. Canadian patent 479,220. Filed July 8, 1947. Issued Dec. 11, 1951. 2 claims. Assigned to Canadian General Electric Company, Limited.

A dielectric material comprises a sheet of kraft paper (sp. gr. 0.85-1.1) which is coated on both sides with a 0.00001- to 0.001-inch film of cellulose acetate. This is the same as U. S. patent 2,526,330; *cf.* B.I.P.C. 21: 214. 4 figures. E.G.S.

COHEN, MEYER. Cup and integral straw. U. S. patent 2,581,516. Filed Oct. 10, 1947. Issued Jan. 8, 1952. 6 claims. [Cl. 229-7]

A paper cup incorporates a drinking straw which is formed as an integral portion of the wall of the cup. 11 figures. E.G.S.

DOUGLAS, F. MILDRED. Mailing folders. Canadian patent 479,621. Filed May 26, 1950. Issued Dec. 25, 1951. 5 claims.

A mailing folder for greeting cards and the like includes integrally formed means for retaining an enclosure which may be preinserted for subsequent identification by the sender without removal from the folder. 7 figures. E.G.S.

GREEN, BARRETT K. Paper having improved printing characteristics. U. S. patent 2,581,186. Filed Nov. 18, 1948. Issued Jan. 1, 1952. 8 claims. Assigned to The National Cash Register Company. [Cl. 117-152]

A printing paper is coated with a zeolite material (e.g., analcite, chabazite, natrolite, heulandite, sodalite, helvite, or noselite) to render it resistant to ink bleed. The zeolite has internal channels which act as adsorbers of ink fluids. This corresponds to Canadian patent 473,636; *cf.* B.I.P.C. 21: 754. E.G.S.

HYDE, JAMES B. Coating composition containing polyethylene and wax and paper coated therewith. U. S. patent 2,582,037. Filed Nov. 12, 1947. Isssued Jan. 8, 1952. 13 claims. Assigned to Crown Zellerbach Corporation. [Cl. 260-28.5]

As an example, a wax paper-coating composition consists of 65 parts of microcrystalline wax, 10 parts of a solid polyethylene polymer, 20 parts of paraffin wax, and five parts of a solid polyisobutylene polymer (all compositions by weight). It is claimed that the waxed sheet will not block in a roll or stack. E.G.S.

JOHANSSON, IDA M. Letter sheet. U. S. patent 2,580,386. Filed June 1, 1948. Isued Jan. 1, 1952. 1 claim. [Cl. 229-92.1]

The bottom margin of a letter sheet is provided with an oblong gummed flap which constitutes an extension of the bottom portion of the sheet and which projects beyond the side portion of the sheet that is located longitudinally of the portion of the sheet occupied by an address. The completely folded sheet is closed by the sealing of the gummed flap. 4 figures. E.G.S.

KEITH, WILLIAM J. Closure cap. U. S. patent 2,581,539. Filed May 9, 1946. Issued Jan. 8, 1952. 3 claims. Assigned to Keith-Peabody, Inc. [Cl. 93-1]

A screw-type closure cap for containers, glass bottles, jars, and the like is formed of several layers of paper or other thin, nonmetallic material. 7 figures. E.G.S.

LEVIN, ISADORE. Disposable toilet seat cover. U. S. patent 2,580,563. Filed Oct. 10, 1947. Issued Jan. 1, 1952. 4 claims. [Cl. 4-243]

A disposable paper sheet which is designed for use in conjunction with a bedpan embodies an end portion which functions as a seat cover and a rela-

tively long, complemental end portion which constitutes a protective flap or shield for bed clothing. 7 figures. E.G.S.

MCCARTHY, JAMES F. Compositions for use in the coating and impregnation of woven or matted fibers. Canadian patent 479,569. Filed Jan. 2, 1946. Issued Dec. 18, 1951. 2 claims. Assigned to Treesdale Laboratories, Inc.

A colorless, flame- and waterproofing composition for woven or matted fibers (i.e., textiles or paper) consists of the following: 4.5% phenol-formaldehyde resin; 26.9% chlorinated paraffin (42%); 16.0% chlorinated paraffin (70%); 24.0% calcium carbonate (finely divided); 19.71% antimony oxide; 1.2% aluminum stearate; and 7.69% solvent (e.g., toluene, naphtha, or methyl ethyl ketone). This corresponds to U. S. patent 2,518,241; *cf.* B.I.P.C. 21: 69. E.G.S.

MATTHEWS, ROBINSON E., and HARRISON, WARD D. Cigarette paper. U. S. patent 2,580,568. Filed May 16, 1950. Issued Jan. 1, 1952. 6 claims. Assigned to Ecusta Paper Corporation. [Cl. 131-15]

A combustible cigarette paper contains a calcium carbonate filler and 0.2-0.4% of ammonium phosphate (expressed as PO_4) which causes the paper, upon burning on a cigarette, to yield a grayish-white, flaky, cohesive ash throughout the length of the cigarette. E.G.S.

MILTON, JOSEPHINE E. Catamenial pad. U. S. patent 2,582,344. Filed Aug. 21, 1950. Issued Jan. 15, 1952. 5 claims. [Cl. 128-290]

A catamenial pad is constructed of several plies of soft paper which are maintained in assembled relation by a single short line of stitching. 5 figures. E.G.S.

NEWMAN, DOUGLAS A. Manifolding paper. U. S. patent 2,582,149. Filed June 27, 1945. Issued Jan. 8, 1952. 4 claims. Assigned to Columbia Ribbon and Carbon Manufacturing Company, Inc. [Cl. 282-28]

A duplicating or manifolding paper is cold printed with an ink composition which contains dispersed, unmelted wax particles and which is subsequently subjected to a heat treatment (e.g., by infrared lamps). This is similar to Canadian patent 455,502; *cf.* B.I.P.C. 19: 675. 5 figures. E.G.S.

NEWMAN, DOUGLAS A. Planographic printing. U. S. patent 2,582,347. Filed March 8, 1945. Issued Jan. 15, 1952. 24 claims. Assigned to Columbia Ribbon and Carbon Manufacturing Company, Inc. [Cl. 101-149.2]

A planographic master comprises a wet-strength paper plate, one face of which carries an ink-receptive, water-repellent image and a substantially solid hydrophilic film which consists essentially of a water-insoluble carboxymethylcellulose compound. The film provides a mask around the image and over the background of the plate. E.G.S.

SCHJELDAHL, GILMORE T., and WENDT, DONOVAN D. Thermoplastic bag construction. Canadian patent 479,666. Filed Nov. 3, 1950. Issued Dec. 25, 1951. 1 claim. Assigned to Bemis Bro. Bag Co.

A polyethylene food-storage bag is adapted to be heat sealed and reopened a number of times. The bag incorporates several transverse, parallel paper bands near the mouth of the bag, so that the portion of the bag which underlies the uppermost band may be subjected to heat and pressure through the band to seal the bag. The uppermost band may be cut or torn away to reopen the bag, and the bag may be reclosed by heat sealing the next lower band. This is the same as U. S. patent 2,547,097; *cf.* B.I.P.C. 21: 756. 2 figures. E.G.S.

SCHUR, MILTON O., and LEVY, ROBERT M. Cigarette paper. U. S. patent 2,580,609. Filed Aug. 2, 1950. Issued Jan. 1, 1952. 12 claims. Assigned to Ecusta Paper Corporation. [Cl. 131-15]

As an example, a combustible cigarette paper contains a carbonate filler and approximately 0.05-0.6% tetra(2-hydroxyethyl)ammonium phosphate (expressed as PO_4). When burned as a cigarette wrapper, the paper produces an ash of fine, discontinuous flakes that adhere closely to the tobacco ash. E.G.S.

SCHUR, MILTON O., and LEVY, ROBERT M. Cigarette paper. U. S. patent 2,580,610. Filed May 29, 1951. Issued Jan. 1, 1952. 2 claims. Assigned to Ecusta Paper Corporation. [Cl. 131-15]

A combustible cigarette paper which contains 20-30% of calcium carbonate filler is impregnated uniformly with 0.1-1% of ammonium phosphate (expressed as PO_4) and 0.002-0.05% of phosphoric acid (based on the dry weight of the cigarette paper). E.G.S.

SCHUR, MILTON O., and LEVY, ROBERT M. Cigarette paper. U. S. patent 2,580,611. Filed June 23, 1951. Issued Jan. 1, 1952. 3 claims. Assigned to Ecusta Paper Corporation. [Cl. 131-15]

A cigarette paper consists predominantly of cellulosic fibers and calcium carbonate filler, and contains the *in situ* reaction products of approximately 2.5% of sodium hydroxide and 1.25% of phosphoric acid. E.G.S.

SCHUR, MILTON O., and LEVY, ROBERT M. Forming cigarette paper. U. S. patent 2,580,608. Filed April 25, 1946. Issued Jan. 1, 1952. 2 claims. Assigned to Ecusta Paper Corporation. [Cl. 92-21]

A process is described for the production of cigarette paper which, when burned, will form a clinging, grayish-white ash that is sufficiently cohesive and integrated to avoid frequent accidental dropping of the ash. About 2.5% of sodium hydroxide and 1.25% of phosphoric acid as a 25% solution are incorporated in a beaten, washed pulp; approximately 40% of calcium carbonate filler is added to the furnish; the resulting furnish is sheeted on a paper machine; and the paper web is dried. E.G.S.

WOOD, GEOFFREY H. Paper cups. Canadian patent 479,645. Filed June 29, 1948. Issued Dec. 25, 1951. 11 claims.

A paper cup for foods or liquids incorporates one or more crescent-shaped carrying tabs which are attached to the underside of the beaded rim of the cup and to its outer wall. The tabs may be colored for identification purposes or imprinted with advertising matter. 16 figures. E.G.S.

PAPER SPLICING

DICKHAUT, CHARLES A. Web unrolling apparatus. U. S. patent

2,582,820. Filed Feb. 10, 1947. Issued Jan. 15, 1952. 4 claims. Assigned to John Waldron Corporation. [Cl. 242-58]

An apparatus is described for unwinding a web from a roll of stock, and simultaneously feeding the web to a treating operation, such as a coating process. The mechanism is the same as that covered by Canadian patent 469,429; *cf.* B.I.P.C. 21 : 294. 6 figures. E.G.S.

PLASTICS

CLARK, THOMAS F. Phenolic molding resins. U. S. patent 2,545,446. Filed May 24, 1950. Issued March 20, 1951. 1 claim. Assigned to the United States of America as represented by the Secretary of Agriculture. [Cl. 260-17.2]

A process for the preparation of a thermosetting plastic molding compound comprises the steps of heating a cresylic acid-treated saccharification lignin, phenol, and formaldehyde to yield a molten, thermosetting material; washing and comminuting the product at a pH of 7.0-8.0; filtering the washed, comminuted resin and mixing it with corncob flour and a small amount of hexamethylenetetramine as a catalyst; and compounding the mixture by milling and heating. E.G.S.

HERITAGE, CLARK C. Manufacture of plastic-fiber compositions. Canadian patent 479,799. Filed July 4, 1945. Issued Dec. 25, 1951. 8 claims. Assigned to Wood Conversion Company.

A resin-bonded fiber mat is produced by the addition of a suitable binder (e.g., a phenol-aldehyde resin, gilsonite, pitch, natural and petroleum asphalts and resins, rosin, ester gum, abietic acid, shellac, protein-base compositions, etc.) in finely divided form to loose wood fibers, the dispersion of the resulting mixture in air within a fiber-settling chamber, and the subjection of the felted mat to heat to immobilize the binder relative to the fiber. This is the same as U. S. patent 2,544,019; *cf.* B.I.P.C. 21: 675. 3 figures. E.G.S.

PLASTICS—HONEYCOMB

LOMBARD, NATHANIEL A., and TAGGART, THOMAS L. Method and apparatus for making structural elements. U. S. patent 2,581,421. Filed April 27, 1948. Issued Jan. 8, 1952. 33 claims. Lombard's interest assigned to Douglas Aircraft Company, Inc. [Cl. 154-1; changed to 154-1.8]

A method and apparatus are described for the manufacture of a honeycombed core or spacer for laminated articles, such as housing walls. A pack is produced which is expandible into a honeycomb and which comprises an integral, fanfolded web of sheet material (e.g., paper, canvas, or other felted or woven material). The faces of the folds are adhesively joined to faces of adjacent folds along a series of parallel, staggered lines. 12 figures. E.G.S.

PLASTICS—PAPER-BASE

COX, EDWIN P. Wood fiber base material and process for making the same. U. S. patent 2,581,635. Filed May 27, 1944. Issued Jan. 8, 1952. 3 claims. Assigned to The Champion Paper and Fibre Company. [Cl. 154-133]

A laminated wood fiber-base product is composed of not less than 0.8 g./cc. of cellulosic wood fiber which is oriented and arranged as in the original

wood and is impregnated with 33-67% of a phenol-formaldehyde resin binder (based on the weight of dry fiber). The product has a modulus of rupture parallel to the grain of not less than 50,000 p.s.i. E.G.S.

ROOFING FELTS

FRICK, OTTO F. V. Pitchy composition and a method of making it. U. S. patent 2,578,883. Filed April 29, 1948. Issued Dec. 18, 1951. 14 claims. [Cl. 106-123]

A roofing material is produced by the combination of about one part of an uncracked pitchy residue (m.p. 37°C.) from a vacuum steam distillation of tall oil with about 0.05 part of rosin, 0.3 part of asbestos fiber, 0.05 part of cotton linters, 0.5 part of Spanish red, 0.06 part of umber, and a precipitate resulting from the combination of 0.4 part of aluminum sulfate dissolved in one part of water with 0.5 part of limestone which contains about 0.2 part by weight of calcium carbonate. All compositions are given on a weight basis. E.G.S.

McMILLAN, WALLACE A. Impregnation of absorbent material. U. S. patent 2,581,685. Filed June 16, 1948. Issued Jan. 8, 1952. 9 claims. Assigned to The Texas Company. [Cl. 117-92]

In the manufacture of asphalt roofing a sheet of felt is passed continuously through a saturating bath of molten, normally solid asphalt (A.S.T.M. penetration at 77°F. about 20-125) maintained at 250-450°F. and containing 0.1-10 p.p.m. by volume of a dimethylsilicone polymer which serves to inhibit the foaming of the asphalt bath; the traveling felt web is withdrawn from the bath in such a manner that a substantial surface film of molten asphalt is retained on both sides of the sheet and is allowed to dry; and a surface coating is applied to the sheet, which is prepared by the addition of finely divided solid inorganic filler to premixed molten, normally solid asphalt and about 0.1-10 p.p.m. by volume (based on the asphalt) of a liquid dimethylsilicone polymer which acts to inhibit the entrainment of vapor bubbles in the coating. 1 figure. E.G.S.

SHIPPING CONTAINERS

BELSINGER, SAMUEL P. Heavy-duty fiber container. U. S. patent 2,578,774. Filed Aug. 10, 1948. Issued Dec. 18, 1951. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-27]

A foldable fiber container which is adapted for the shipment of eggs, oranges, and the like is made from a single rectangular blank by slitting as distinguished from die cutting and shaping. 6 figures. E.G.S.

BELSINGER, SAMUEL P. Heavy-duty fiber container. U. S. patent 2,578,775. Filed June 17, 1949. Issued Dec. 18, 1951. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-23; changed to 229-27]

A heavy-duty fiber shipping container for citrus fruits embodies reinforcing members for its bottom and end walls. 4 figures. E.G.S.

BELSINGER, SAMUEL P. Heavy-duty fiber container. U. S. patent 2,578,776. Filed March 1, 1950. Issued Dec. 18, 1951. 3 claims. Assigned to Belsinger, Inc. [Cl. 229-16; changed to 229-27]

A heavy-duty shipping container for eggs, oranges, and the like is described in which the end walls are provided with half side sections, between

which and the front wall the partition flaps are housed, and are securely connected to the front wall. 7 figures. E.G.S.

BELSINGER, SAMUEL P. Heavy-duty fiber container. U. S. patent 2,578,777. Filed March 1, 1950. Issued Dec. 18, 1951. 3 claims. Assigned to Belsinger, Inc. [Cl. 229-16; changed to 229-27]

A heavy-duty shipping container for eggs, oranges, and the like incorporates a double-wall partition which serves to divide the container into two compartments of equal capacity. 10 figures. E.G.S.

DONNELL, JOHN S. Container. U. S. patent 2,581,944. Filed Aug. 9, 1950. Issued Jan. 8, 1952. 5 claims. Assigned to Florida Fibre Box Company. [Cl. 229-19]

A corrugated shipping container comprises an open tray and an open-end sleeve of rectangular cross section which is adapted to receive the tray. A releasable latch arrangement is provided for securing the tray within the sleeve. 6 figures. E.G.S.

HUNSWORTH, MELVIN T. Textile container with slotted corners. U. S. patent 2,581,105. Filed May 25, 1948. Issued Jan. 1, 1952. 5 claims. Assigned to Container Corporation of America. [Cl. 229-23]

A paperboard container for the packaging of textiles comprises identical top and bottom sections, the ends of which are constructed so as to permit a limited telescoping of the two sections. 4 figures. E.G.S.

JAMESON, MORTON B. Container. U. S. patent 2,581,664. Filed June 7, 1946. Issued Jan. 8, 1952. 4 claims. Assigned to Waldorf Paper Products Company. [Cl. 206-52]

A shipping container of rectangular cross-section which is designed for the packaging of paper rolls (e.g., calendars, pictures, advertising matter, and the like) embodies wedge-shaped or tapered ends which serve to deform the ends of the rolls and to prevent their endwise movement during shipment. 5 figures. E.G.S.

THOMAS, ALLEN B. Divisible carton. U. S. patent 2,580,333. Filed May 28, 1949. Issued Dec. 25, 1951. 4 claims. [Cl. 229-15]

A shipping carton for bottled beverages (e.g., beer) can be readily separated into two independent bottle carriers, each of which accommodates six bottles. 6 figures. E.G.S.

SHIPPING CONTAINERS—FIBER DRUMS

DUNNING, ROBERT M., and GUYER, REYNOLDS. Method for forming paper can bodies. U. S. patent 2,580,665. Filed June 2, 1945. Issued Jan. 1, 1952. 11 claims. Assigned to Waldorf Paper Products Company. [Cl. 93-94]

A can body is constructed of sheets of paperboard which are bent into cylindrical form and laminated together with a thermoplastic adhesive. The sheets are arranged so that the butt edges of the various laminations are in angularly spaced relationship. 18 figures. E.G.S.

HARRISON, JOHN K. M. Shock resistant container. U. S. patent 2,582,541. Filed June 24, 1947. Issued Jan. 15, 1952. 8 claims. [Cl. 229-5.5]

A cylindrical nonmetallic (i.e., paper or plastic) container which is designed for use in the packaging of oils or foodstuffs has an end structure which consists of a flexible, laminated parchment closure disk, a rigid closure disk, and a rigid, waterproof cover disk. The various disks coact to provide adequate seals and high resistance to rupture incident to rough handling or other mechanical strain. 2 figures. E.G.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

SCHENCK, ARTHUR E. Bag closure. U. S. patent 2,582,286. Filed June 16, 1947. Issued Jan. 15, 1952. 1 claim. Assigned to Bemis Bro. Bag Company. [Cl. 229-62]

A tubular bag body blank of the intucked type includes a relatively wide wall which projects above the top edges of the remaining walls to provide an integral closure flap; the upper marginal edge portions of the intucked walls are disposed at an elevation between the upper and lower edges of the relatively wider walls of the bag, so that when the projecting closure flap is folded into flat engagement with the opposite wall on a line which is coincident with the top edge of that wall, the projecting ends of the intucked walls are simultaneously folded into flat engagement with the front wall and adhered thereto by a suitable thermoplastic adhesive. A closure is effected which is leak- and siftproof. This corresponds to Canadian patent 469,027; *cf.* B.I.P.C. 21: 296. 17 figures. E.G.S.

YOUNT, STANLEY G. Bag. U. S. patent 2,581,826. Filed Sept. 29, 1947. Issued Jan. 8, 1952. 3 claims. [Cl. 229-53; changed to 229-55]

A large multiwall paper bag which is suitable for covering divans, armchairs, and the like is so designed that more than one width of a jumbo roll can be utilized in its fabrication. The bag is constructed with flat front and rear walls and pleated side walls. 10 figures. E.G.S.

SULFITE WASTE LIQUOR

FENN, JAMES E. Adhesive composition. U. S. patent 2,579,481. Filed Feb. 17, 1948. Issued Dec. 25, 1951. 11 claims. Assigned one tenth to Charles H. Brown. [Cl. 260-17.5]

A remoistening adhesive composition includes as the principal ingredient spent sulfite liquor which has been treated with 1-2.5% of phosphoric acid and then blended with polyvinyl alcohol and 10-20% of a plasticizer (e.g., urea or thiourea), based on the dry weight of the alcohol and acid-treated liquor. The adhesive is suitable for gummed tape or paper. E.G.S.

FENN, JAMES E. Adhesive composition. U. S. patent 2,579,483. Filed July 29, 1949. Issued Dec. 25, 1951. 9 claims. Assigned one tenth to Charles H. Brown. [Cl. 260-17.5]

A remoistening adhesive composition contains concentrated spent sulfite liquor as a major ingredient, 1-6% of phosphoric acid (based on the dry weight of liquor solids), 5-25% of polyvinyl alcohol, 10-25% of a plasticizer (e.g., urea or thiourea), approximately 1% of zinc hydrosulfite, and 2-6% of formamide. E.G.S.

FENN, JAMES E. Adhesive composition of sulphite waste liquor, phosphoric acid, and sulfur dioxide. U. S. patent 2,579,482. Filed Feb. 17, 1948. Issued Dec. 25, 1951. 10 claims. Assigned one tenth to Charles H. Brown. [Cl. 260-17.5]

A process for making a remoistening adhesive which is suitable for use on gummed tape or paper comprises the steps of adding the equivalent of 0.5-3% (based on the volume of spent liquor) of 75% phosphoric acid to concentrated spent sulfite liquor, adding approximately 1% of a compound capable of releasing sulfur dioxide when mixed with water (e.g., sodium bisulfite or zinc hydrosulfite), heating the resulting product, and adding a polyvinyl alcohol solution to the acid-treated liquor. E.G.S.

SALATHIEL, RICHARD A. Composition for oil well cementing. U. S. patent 2,582,459. Filed Nov. 3, 1948. Issued Jan. 15, 1952. 6 claims. Assigned to Standard Oil Development Company. [Cl. 106-90]

A composition which is suitable for use in the cementing of oil wells consists of Portland cement, 16% by weight of colloidal clay (e.g., bentonite), 0.5% by weight of calcium lignosulfonate, both based on the dry cement, and approximately 10 gallons of water for each 94 pounds of cement. 7 figures. E.G.S.

TALL OIL

HUNN, JAMES V. Method for the preparation of aluminum and magnesium soaps. U. S. patent 2,582,833. Filed July 12, 1950. Issued Jan. 15, 1952. 14 claims. Assigned to The Sherwin-Williams Company. [Cl. 260-414; changed to 260-97.5]

A process for the preparation of the aluminum or magnesium salts of aliphatic acids (e.g., tall oil acids) comprises the steps of admixing aluminum or magnesium with 4-20 times the dry weight of the metal of a dry aliphatic alcohol (e.g., methyl or ethyl alcohol) having less than four carbon atoms and containing a trace of a soluble mercury compound (e.g., mercuric acetate or chloride), adding a free aliphatic acid, and reacting the mixture to produce a substantially anhydrous product. E.G.S.

JORDAN, WESLEY A., and HERBAN, MELVIN S. Plastic tall oil rosin fractions. Canadian patent 479,503. Filed Dec. 6, 1948. Issued Dec. 18, 1951. 8 claims. Assigned to General Mills, Inc.

A tall oil rosin fraction which contains about 69% rosin acids and 29% fatty acids is partially esterified with approximately 5% of glycerol. The product has an acid number which is 40% less than that of the original rosin fraction. The partially esterified material is suitable for use in the production of adhesives, coatings, soap, rubber compounds, and other specialties. E.G.S.

MILLIKEN, FRANK R. Concentration of ilmenite. Canadian patent 479,073. Filed June 24, 1948. Issued Dec. 4, 1951. 9 claims. Assigned to American Cyanamid Company.

Tall oil is utilized as an anionic promoter in the concentration by froth flotation of titanium dioxide-bearing minerals (e.g., ilmenite, rutile, and the like) from low-grade ores which contain excessive amounts of mixed gangue. E.G.S.

VAN VALKENBURGH, EDWARD A. Composition of tall oil and aromatic oil and method of making it. U. S. patent 2,578,955. Filed Oct. 14, 1950. Issued Dec. 18, 1951. 7 claims. [Cl. 106-123]

A composition which is suitable for use in the compounding of GR-S synthetic rubber and mixtures of such rubber with natural rubber consists essentially of heat-treated crude tall oil which has been preheated above 260°F. and blended with 10-15% of nonvolatile aromatic oil. E.G.S.

ZEISS, HAROLD H. Separation of rosin acids. U. S. patent 2,580,496. Filed July 14, 1948. Issued Jan. 1, 1952. 7 claims. Assigned to The Fulwal Chemical Corporation. [Cl. 260-100]

A method for the separation of dehydroabietic acid from disproportionated rosin comprises the steps of dissolving disproportionated rosin in an aqueous alkaline solution (e.g., sodium hydroxide or carbonate), adding sufficient mineral acid (e.g., 0.1 *N* hydrochloric acid) to the solution to react with the alkali salts of the hydroabietic acids present but insufficient to react with the alkali salts of dehydroabietic acid present, separating the resulting precipitate of hydroabietic acids, and recovering the dehydroabietic acid constituent from the solution. E.G.S.

ULTRA-VIOLET RAYS

PEARL, IRWIN A. Ultraviolet-radiation impervious wrapping material. U. S. patent 2,580,461. Filed Aug. 27, 1947. Issued Jan. 1, 1952. 12 claims. Assigned to Sulphite Products Corporation. [Cl. 117-121; changed to 88-109]

A transparent food wrapper which is substantially impervious to ultraviolet radiation in the wavelength range of 2400-3100 A. comprises a base sheet (e.g., glassine, parchment, cellophane, or the like) which is normally pervious to ultraviolet radiation and which is coated with a composition that contains a sufficient amount of 3-methoxy-4-hydroxybenzoic acid to render the sheet impervious to ultraviolet radiation. 1 figure. E.G.S.

WET STRENGTH

MAXWELL, CHARLES S. Sizing fibrous materials with modified urea-formaldehyde resin. U. S. patent 2,582,840. Filed Sept. 7, 1946. Issued Jan. 15, 1952. 4 claims. Assigned to American Cyanamid Company. [Cl. 92-21]

A method for the manufacture of wet-strength paper (e.g., a sheet made from 25% kraft and 75% asbestos fibers) comprises the steps of adding to a pulp suspension an aqueous solution of a partially polymerized, hydrophilic urea-formaldehyde-sulfite resin colloid; precipitating 0.1-5% by weight of the resin on the fibers; forming the resin-containing fibers into a waterlaid sheet; and curing the resin *in situ* while heat drying the sheet at 180-300°F. for not more than five minutes. E.G.S.

WOOD OPERATIONS

LARSON, HARRY D. Portable logging tower. U. S. patent 2,582,548. Filed April 1, 1946. Issued Jan. 15, 1952. 2 claims. Assigned to Isaacson Iron Works. [Cl. 189-11]

A portable logging tower is mounted on a wheeled carrier which serves as a supporting base when the mast or tower is erected. 9 figures. E.G.S.

Book Review

VENKATARAMAN, K. The chemistry of synthetic dyes. New York, Academic Press Inc., 1951. v. 1. 704 p.

The first volume contains 704 pages of closely printed material without an index (apparently to appear in volume 2). It covers in essence the raw materials from coal tar and petroleum, intermediates of the dyestuff industry and their production from raw materials, classification and application of dyes, a good discussion of color and its measurement, the relation of color and chemical constitution, and detailed descriptions of some fourteen classes of dyestuffs. The book contains an enormous amount of information, and it would be impossible to determine in any comprehensive way the accuracy of the material unless the reviewer were to be well versed in the detailed operations of the dyestuff industry. The author has gone to many sources of information, particularly with reference to the German dyestuff industry. The book should be of interest to organic chemists and technical people who are interested in dyestuff products or who use them in any quantity. The first volume at least does not give any direct information with regard to the nature and application of dyes specifically for the paper industry. It could be used only as a reference book by a paper technologist. The description of the fibrous raw materials, particularly in the case of cellulose, is rather sketchy and does not provide a good picture of the structure of the fiber and the chemical nature of cellulose as we know it today, although it affords a useful general picture. The book should be of particular interest to men in the textile industry, since it is written primarily for that industry. The reviewer did not find the footnotes at the bottom of the page easy to follow; general references are often made to earlier pages, and at times it seemed difficult to tie together the reference with the specific item on the page. Nevertheless this is a minor criticism of what appears to be a very good book on the nature and chemistry of dyestuffs and the dyestuff industry. The second volume is due for publication in the spring of 1952.

HARRY F. LEWIS

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To contributing members it gives the following service:

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At a reasonable cost the librarian will furnish complete reference lists on chemical and technical problems for member mills, and will procure translations, photostats, or abstracts of the articles listed. Upon request, member mills working on special problems will be kept in touch with new publications related to their work.

Reviews of new publications pertaining to the field of pulp and papermaking will be included from time to time.

The library is open daily with the exception of Sundays from 8:15-5:00 and from 7:30-9:30. Saturday it closes at 5:00 o'clock.